

1/44

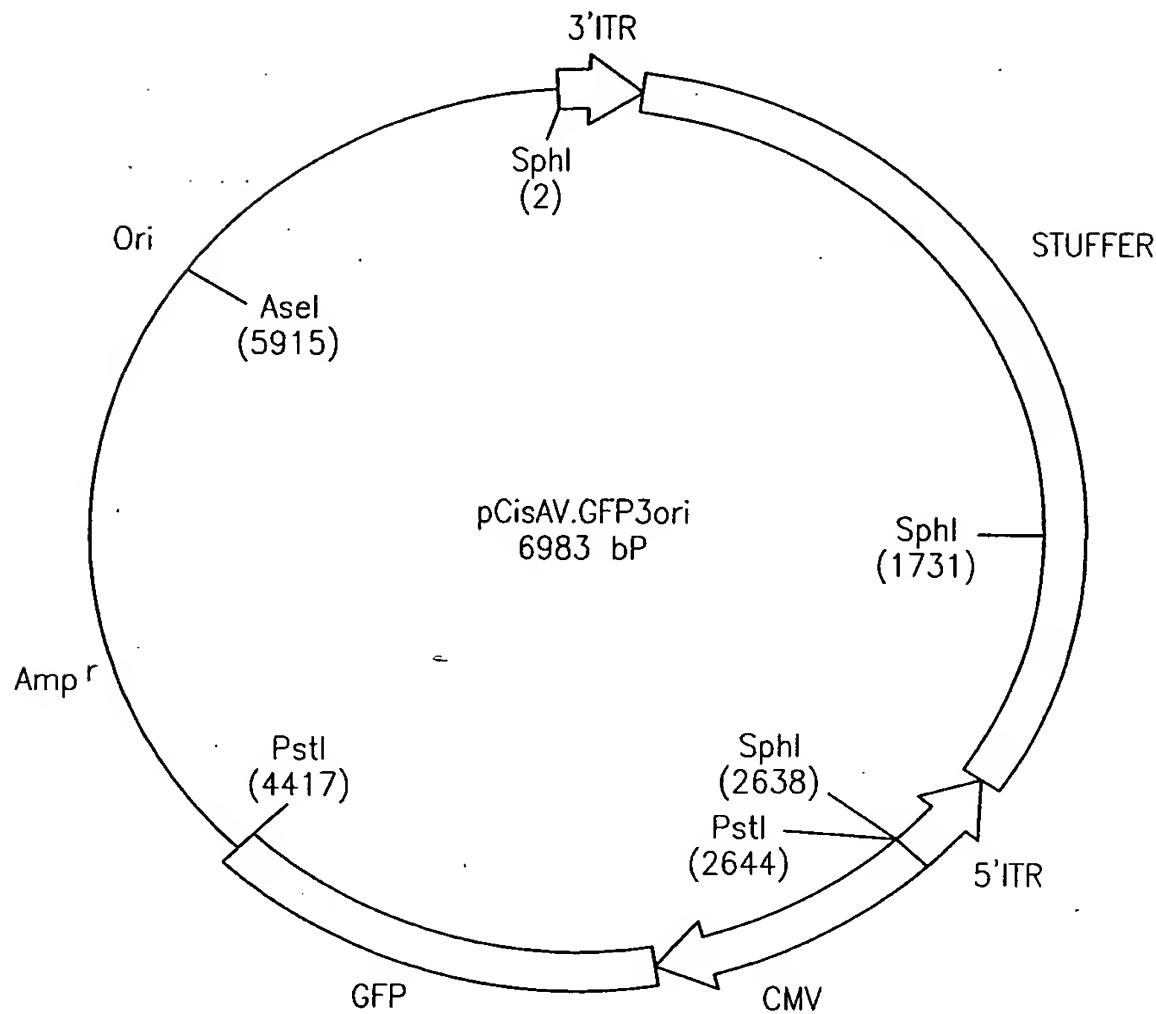


FIG. 1A

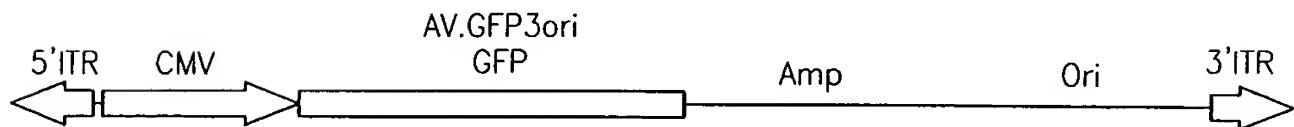


FIG. 1B

1: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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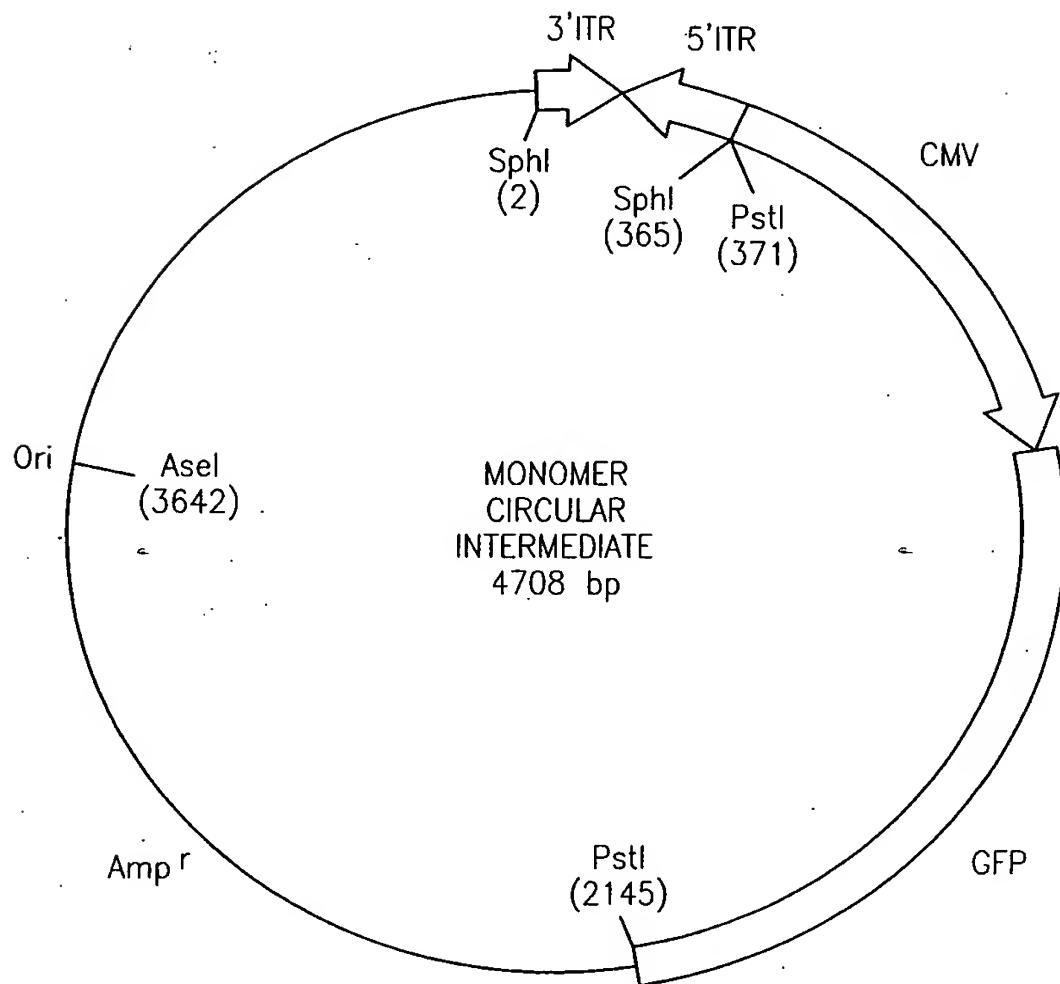


FIG. 1C

INFECT HELA CELLS AND MUSCLE WITH AV.GFP3ori

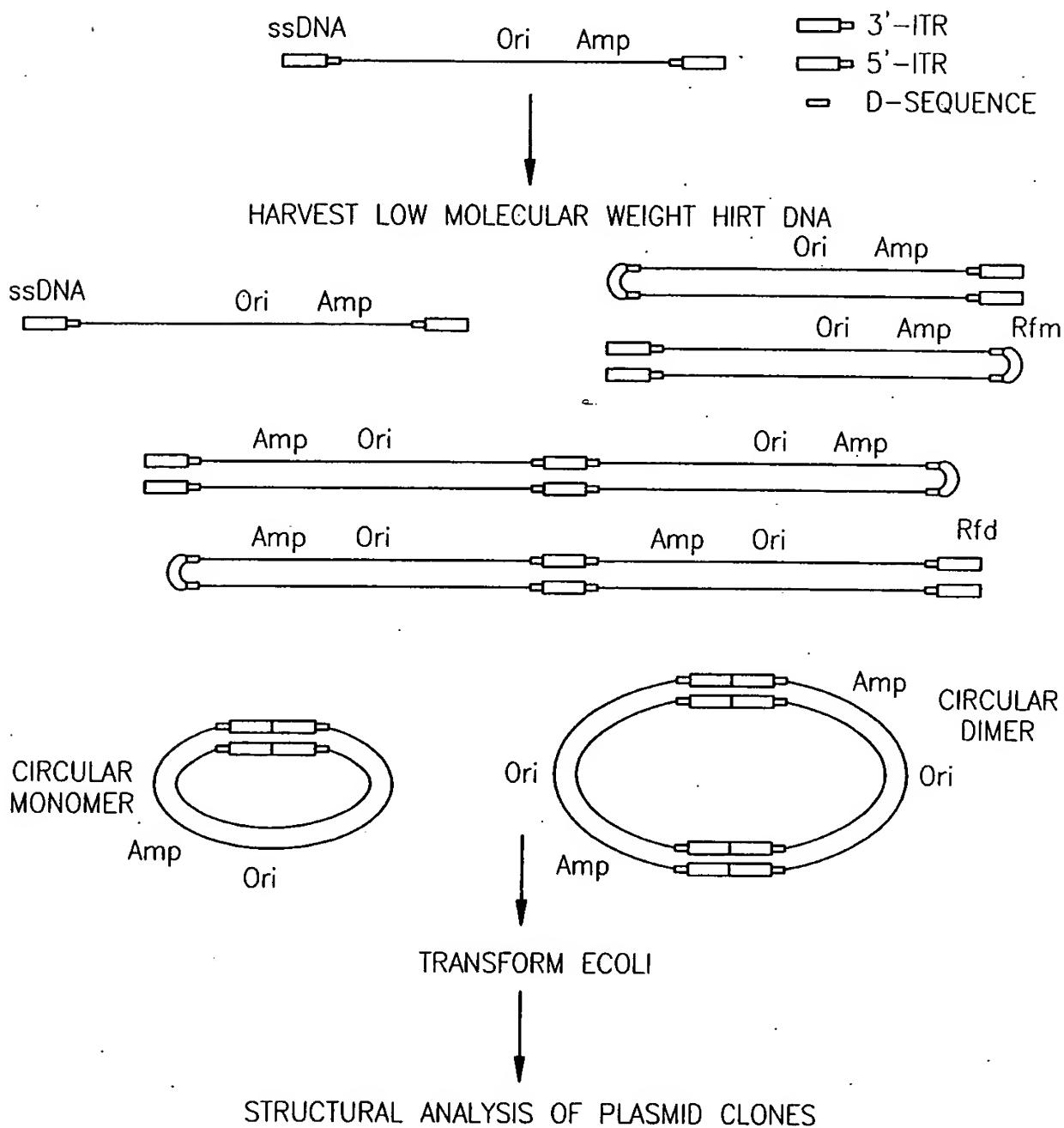


FIG. 1D

THE ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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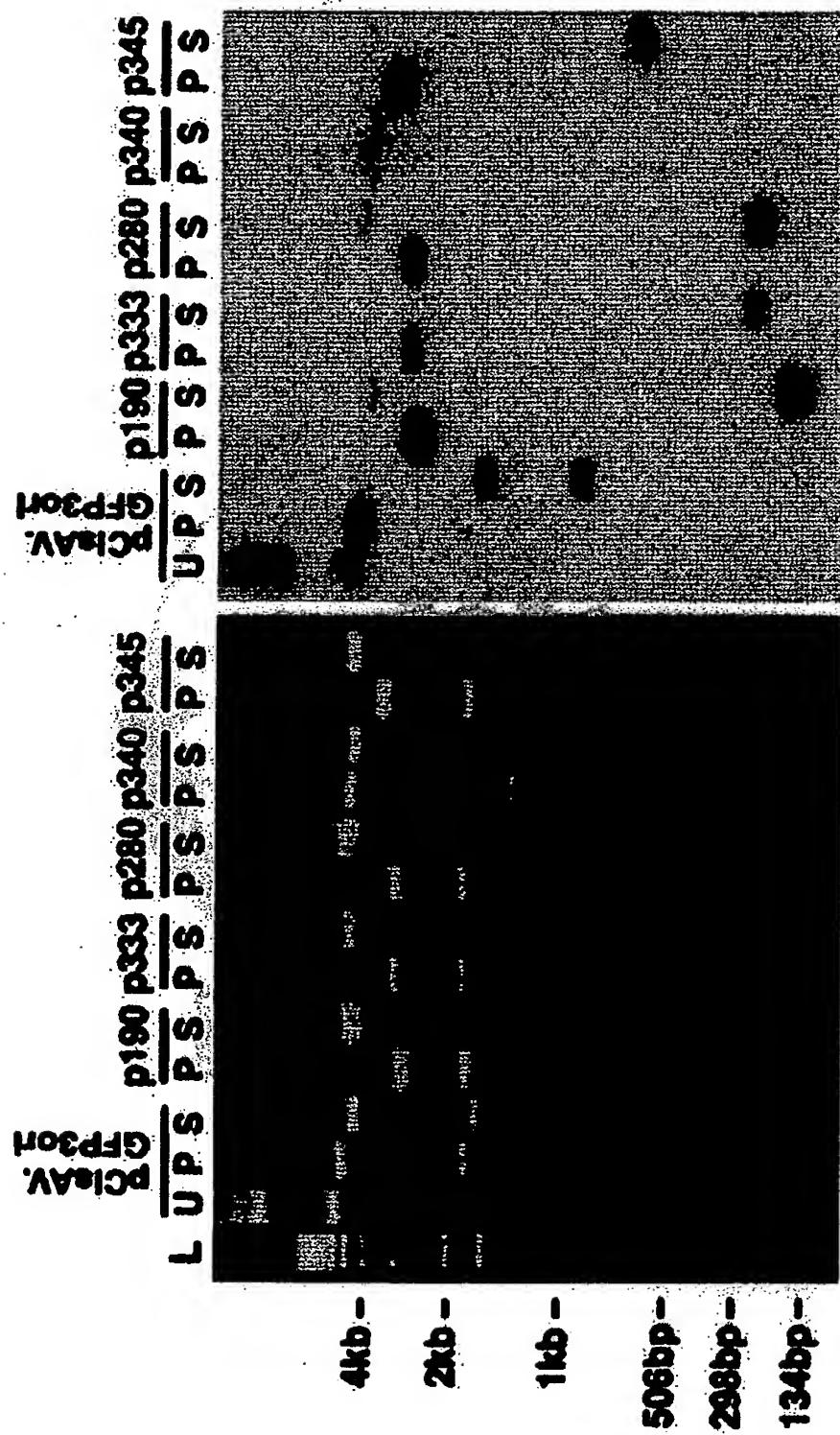


FIG. 2A

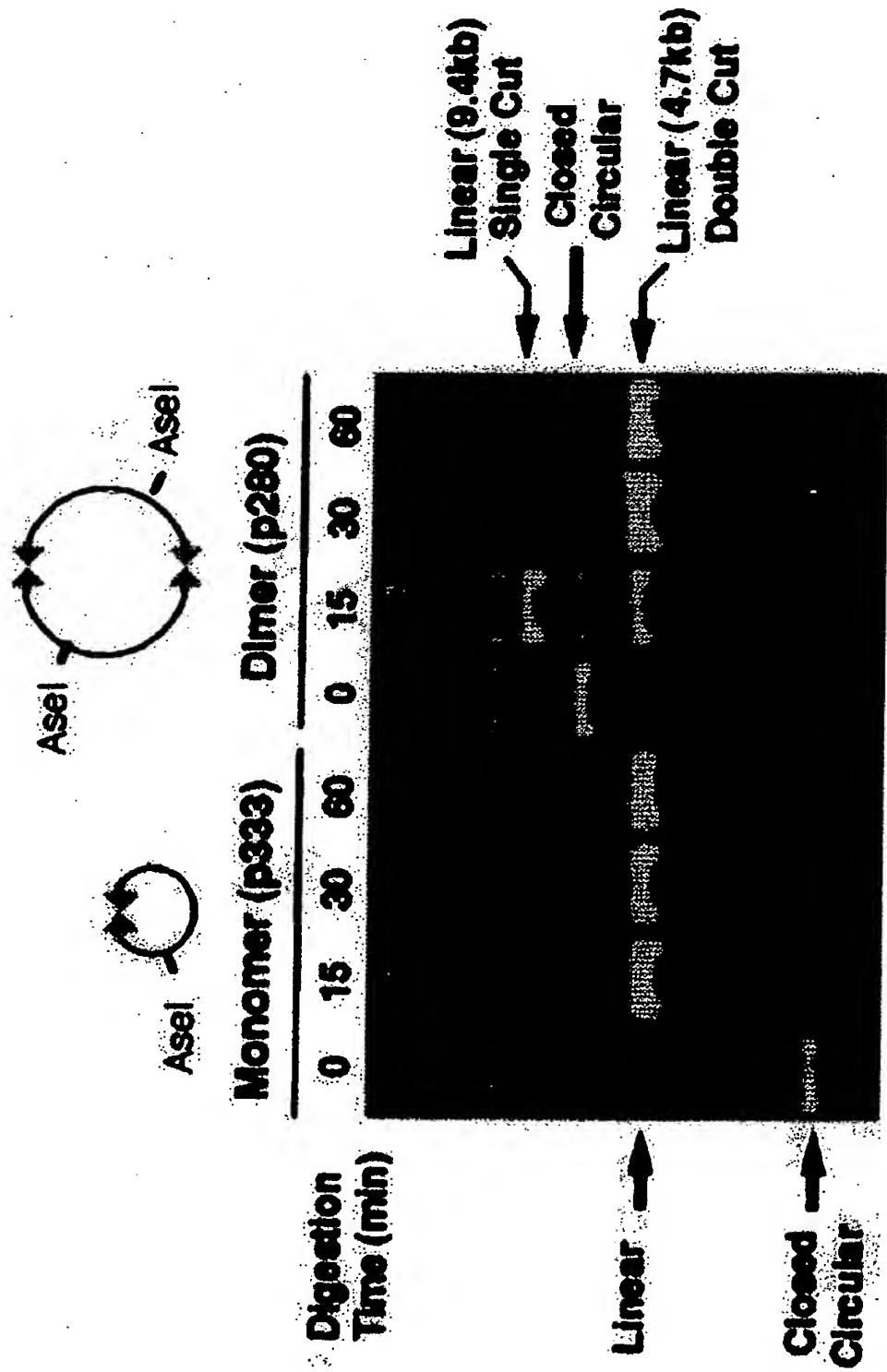


FIG. 2B

ADENO-ASSOCIATED VIRUS VECTORS
 INVENTORS NAME: John F. Engelhardt et al.
 SERIAL NO.: 09/276,625

5'-->3' ITR 10 20 30 40 50 60 70 80 90 100 110
 CCATTTACG CCAGGGGG CCATTTACG TAAGTATGT AACGACTGCA GCGATGCAAG CTCGAATCA TCGTAGATA AGTAGCATGG CGGGTTAATC
 P79 ---GGGGGG CCATTTACG TAAGTATGT AACGACTGCA GCGATGCAAG CTCGAATCA TCGTAGATA AGTAGCATGG CGGGTTAATC
 P80 ---GGGGGG CCATTTACG TAAGTATGT AACGACTGCA GCGATGCAAG CTCGAATCA TCGTAGATA AGTAGCATGG CGGGTTAATC
 P81 ---GGGGGG CCATTTACG TAAGTATGT AACGACTGCA GCGATGCAAG CTCGAATCA TCGTAGATA AGTAGCATGG CGGGTTAATC
 P86 ---GGGGGG CCATTTACG TAAGTATGT AACGACTGCA GCGATGCAAG CTCGAATCA TCGTAGATA AGTAGCATGG CGGGTTAATC
 P87 ---GGGGGG CCATTTACG TAAGTATGT AACGACTGCA GCGATGCAAG CTCGAATCA TCGTAGATA AGTAGCATGG CGGGTTAATC
 P88 ---GGGGGG CCATTTACG TAAGTATGT AACGACTGCA GCGATGCAAG CTCGAATCA TCGTAGATA AGTAGCATGG CGGGTTAATC

SmaI

5'-->3' ITR 120 130 140 150 160 170 180 190 200 210 220
 ATTAATCA AGAAACCCCT AGTAAATGAG TTGGCCACTC CCTCTCTCG CGCGCTCTCG C-
 P79 ATTAATCA AGAAACCCCT AGTAAATGAG TTGGCCACTC CCTCTCTCG CGCGCTCTCG CTCGCTCTCG CGCGCTCTCG CTCGCTCTCG
 P80 ATTAATCA AGAAACCCCT AGTAAATGAG TTGGCCACTC CCTCTCTCG CGCGCTCTCG CTCGCTCTCG CGCGCTCTCG CTCGCTCTCG
 P81 ATTAATCA AGAAACCCCT AGTAAATGAG TTGGCCACTC CCTCTCTCG CGCGCTCTCG CTCGCTCTCG CGCGCTCTCG CTCGCTCTCG
 P86 ATTAATCA AGAAACCCCT AGTAAATGAG TTGGCCACTC CCTCTCTCG CGCGCTCTCG CTCGCTCTCG CGCGCTCTCG CTCGCTCTCG
 P87 ATTAATCA AGAAACCCCT AGTAAATGAG TTGGCCACTC CCTCTCTCG CGCGCTCTCG CTCGCTCTCG CGCGCTCTCG CTCGCTCTCG
 P88 ATTAATCA AGAAACCCCT AGTAAATGAG TTGGCCACTC CCTCTCTCG CGCGCTCTCG CTCGCTCTCG CGCGCTCTCG CTCGCTCTCG

SmaI

5'-->3' ITR 230 240 250 260 270 280 290 300 310 320 330
 GGGGCCATCA GTCAGGAGC GAGGCCGAG CTGGCGGCCTC GTCGGCTCAC TGAAGCCGCC CGGGCCATCA GTCAGGAGC GTCAGGAG
 P79 ---GGGGGCCATCA GTCAGGAGC GAGGCCGAG CTGGCGGCCTC GTCGGCTCAC TGAAGCCGCC CGGGCCATCA GTCAGGAG
 P80 ---GGGGGCCATCA GTCAGGAGC GAGGCCGAG CTGGCGGCCTC GTCGGCTCAC TGAAGCCGCC CGGGCCATCA GTCAGGAG
 P81 ---GGGGGCCATCA GTCAGGAGC GAGGCCGAG CTGGCGGCCTC GTCGGCTCAC TGAAGCCGCC CGGGCCATCA GTCAGGAG
 P86 ---GGGGGCCATCA GTCAGGAGC GAGGCCGAG CTGGCGGCCTC GTCGGCTCAC TGAAGCCGCC CGGGCCATCA GTCAGGAG
 P87 ---GGGGGCCATCA GTCAGGAGC GAGGCCGAG CTGGCGGCCTC GTCGGCTCAC TGAAGCCGCC CGGGCCATCA GTCAGGAG
 P88 ---GGGGGCCATCA GTCAGGAGC GAGGCCGAG CTGGCGGCCTC GTCGGCTCAC TGAAGCCGCC CGGGCCATCA GTCAGGAG

SmaI

5'-->3' ITR 340 350 360 370 380 390 400 410 420 430 440
 CGGCCAGGG CGCCAGGAA GATGGCCAA TCCCATCTACT TGTAGTATAT GATTAACCCG CCATCTACT TTCTACAGC TTGCAATCAT GTCACCAA
 P79 ---CGAGCG CGCCAGGAA GATGGCCAA CTCCCTACT AGGGGTCCTC GCGCTTAT GATTAACCCG CCATCTACT TTCTACAGC TTGCAATCAT GTCACCAA
 P80 CGGCCAGGG CGCCAGGAA GATGGCCAA CTCCCTACT AGGGGTCCTC GCGCTTAT GATTAACCCG CCATCTACT TTCTACAGC TTGCAATCAT GTCACCAA
 P81 CGGCCAGGG CGCCAGGAA GATGGCCAA CTCCCTACT AGGGGTCCTC GCGCTTAT GATTAACCCG CCATCTACT TTCTACAGC TTGCAATCAT GTCACCAA
 P86 CGGCCAGGG CGCCAGGAA GATGGCCAA CTCCCTACT AGGGGTCCTC GCGCTTAT GATTAACCCG CCATCTACT TTCTACAGC TTGCAATCAT GTCACCAA
 P87 CGGCCAGGG CGCCAGGAA GATGGCCAA CTCCCTACT AGGGGTCCTC GCGCTTAT GATTAACCCG CCATCTACT TTCTACAGC TTGCAATCAT GTCACCAA
 P88 CGGCCAGGG CGCCAGGAA GATGGCCAA CTCCCTACT AGGGGTCCTC GCGCTTAT GATTAACCCG CCATCTACT TTCTACAGC TTGCAATCAT GTCACCAA

SmaI

5'-->3' ITR 450 460 470 480 490 500 505
 AGCCAGGAA CGCTTAAAG CGCCGCTTGC TGGGTTCCTT CCATAGCTC CGCC
 P79 CGCCAGGAA AGCCAGGAA CGCTTAAAG CGCCGCTTGC TGGGTTCCTT CCATAGCTC CGCC
 P80 CGCCAGGAA AGCCAGGAA CGCTTAAAG CGCCGCTTGC TGGGTTCCTT CCATAGCTC CGCC
 P81 CGCCAGGAA AGCCAGGAA CGCTTAAAG CGCCGCTTGC TGGGTTCCTT CCATAGCTC CGCC
 P86 CGCCAGGAA AGCCAGGAA CGCTTAAAG CGCCGCTTGC TGGGTTCCTT CCATAGCTC CGCC
 P87 CGCCAGGAA AGCCAGGAA CGCTTAAAG CGCCGCTTGC TGGGTTCCTT CCATAGCTC CGCC
 P88 CGCCAGGAA AGCCAGGAA CGCTTAAAG CGCCGCTTGC TGGGTTCCTT CCATAGCTC CGCC

FIG. 2C

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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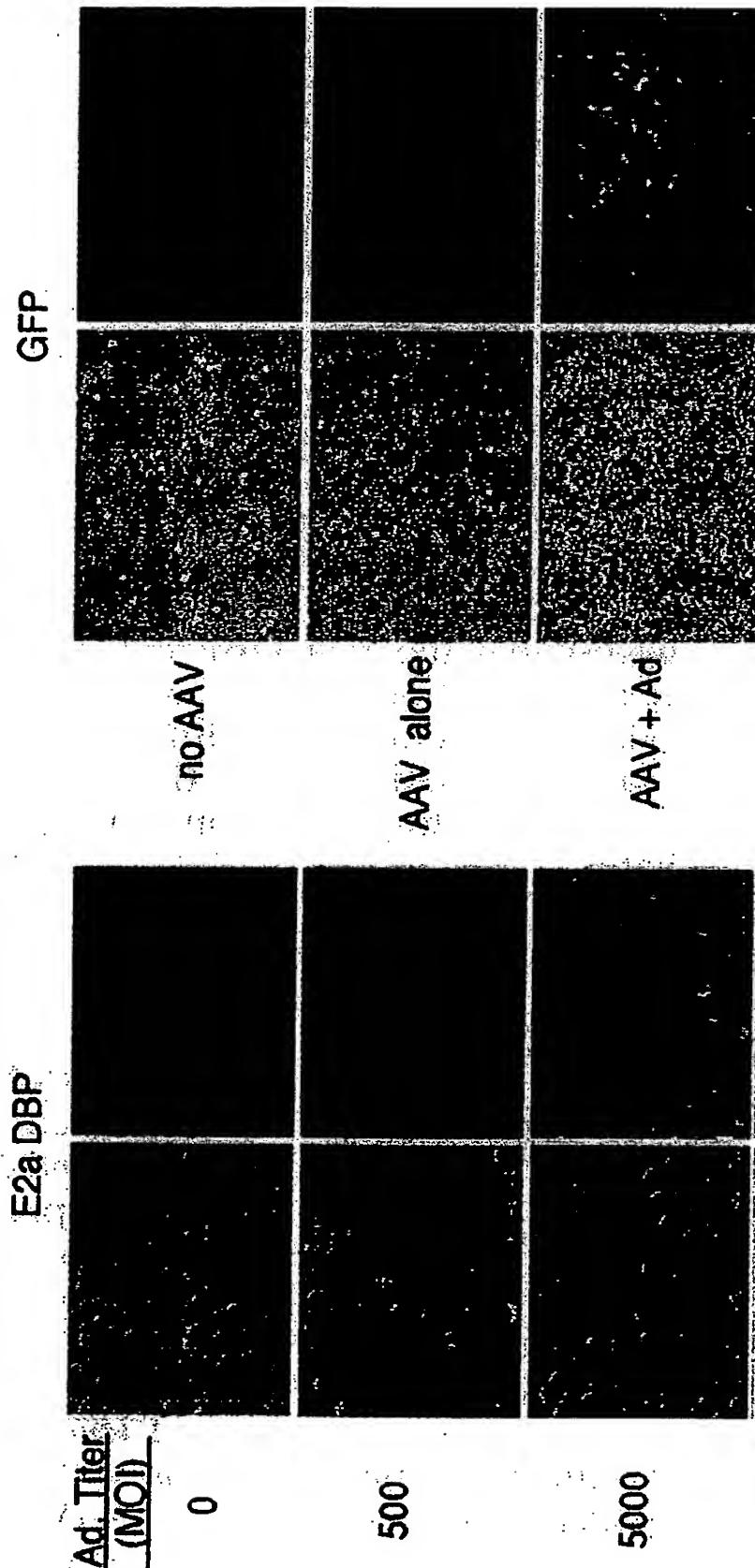


FIG. 3A FIG. 3B

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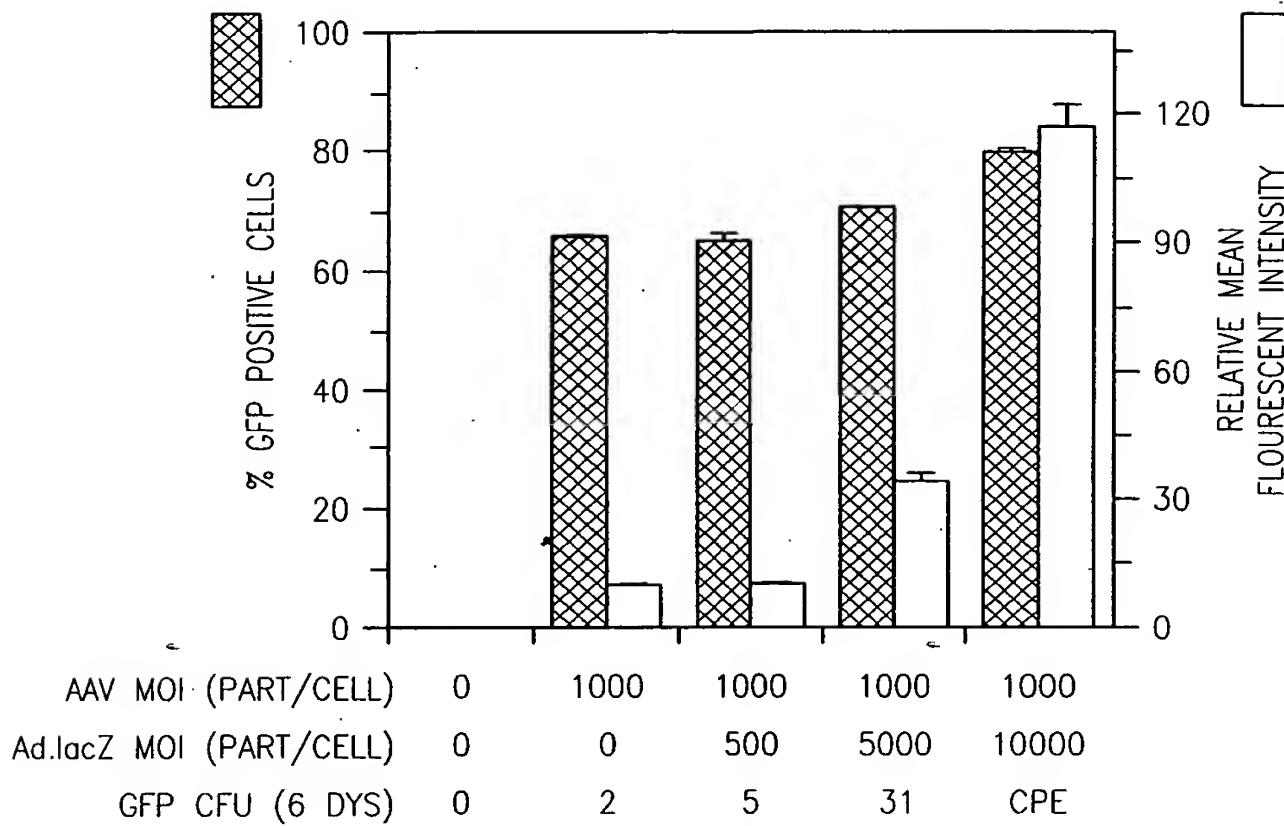


FIG. 3C

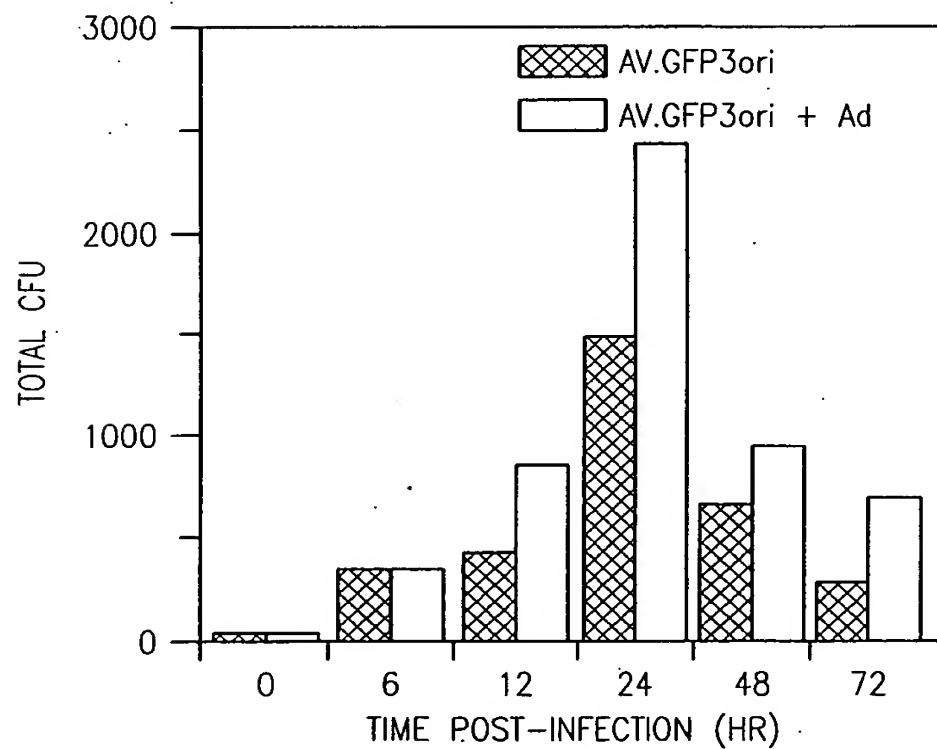


FIG. 3D

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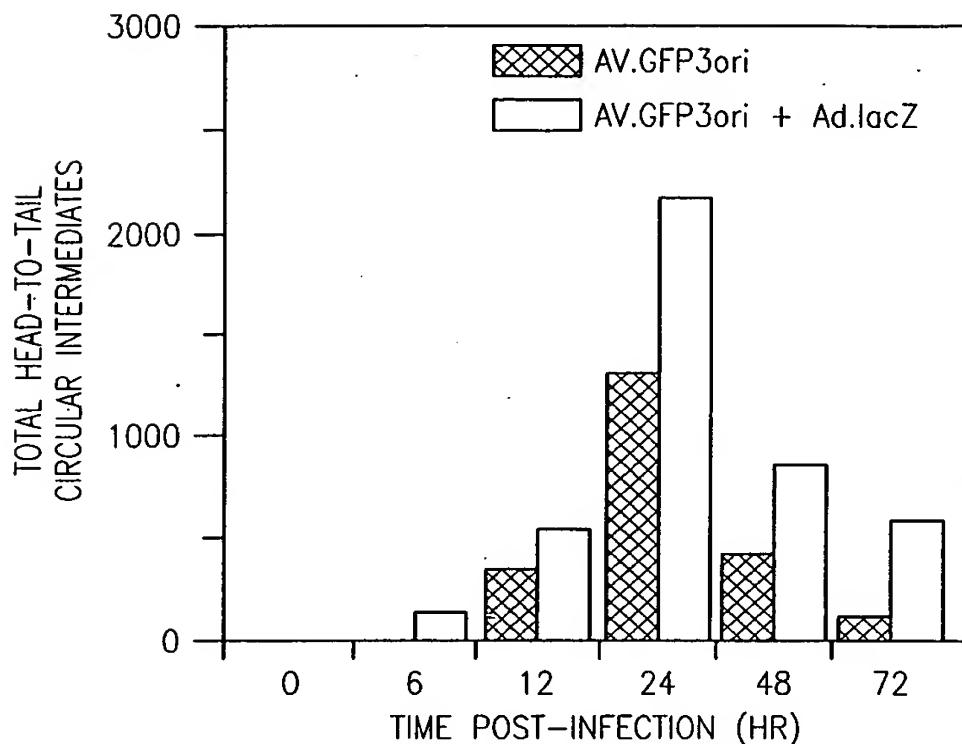


FIG. 3E

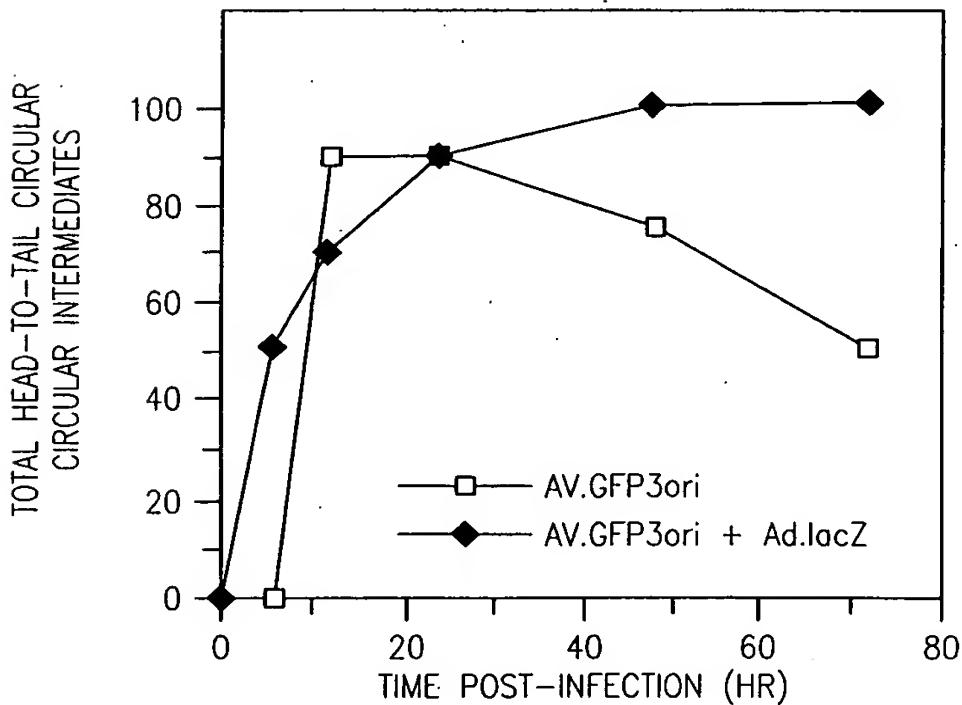


FIG. 3F

10
TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

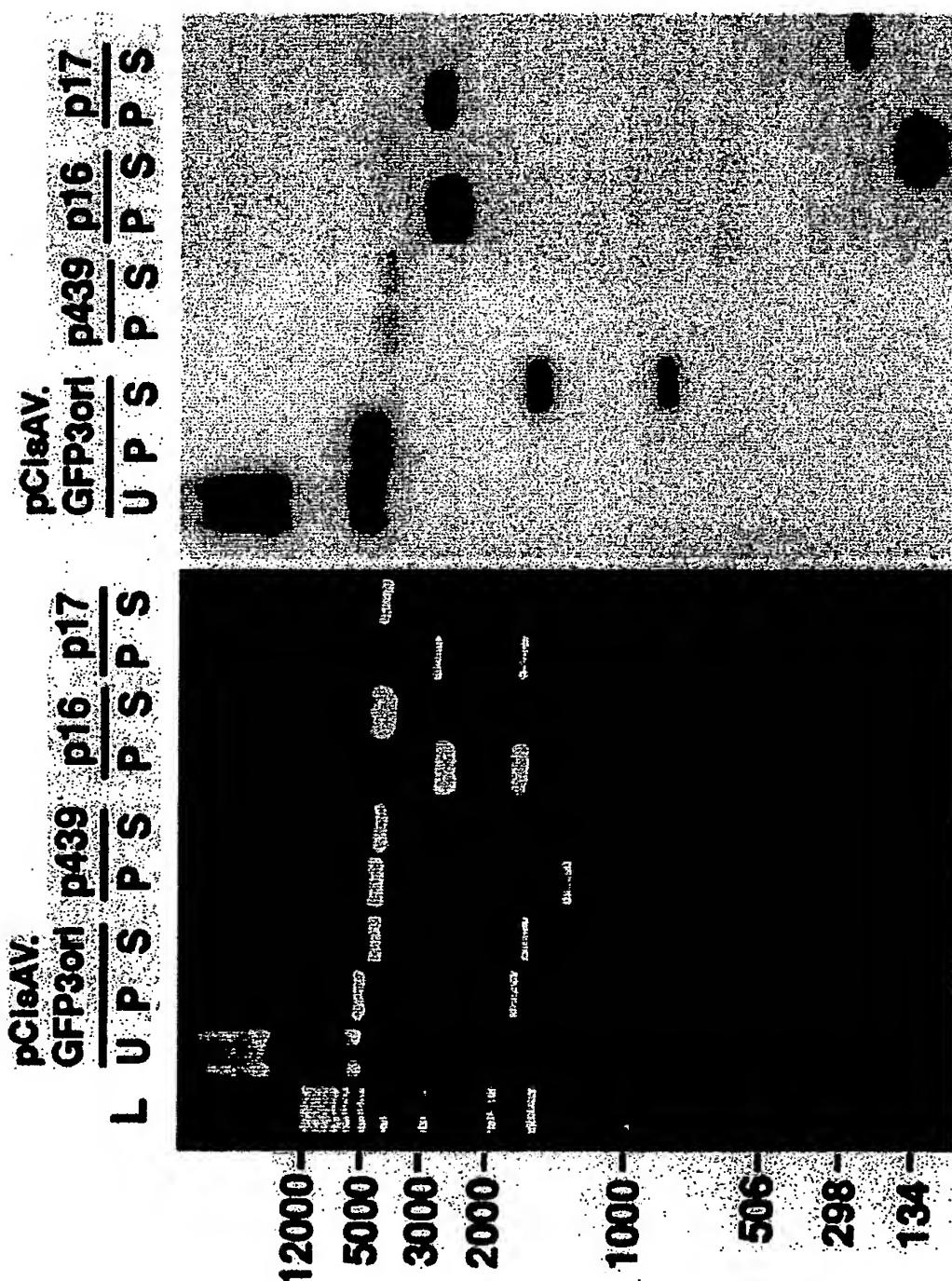
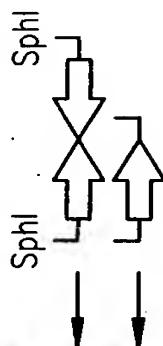
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0 dy	5 dy	10 dy	16 dy	22 dy	30 dy	80 dy	80 dy
------	------	-------	-------	-------	-------	-------	-------

FIG. 4A

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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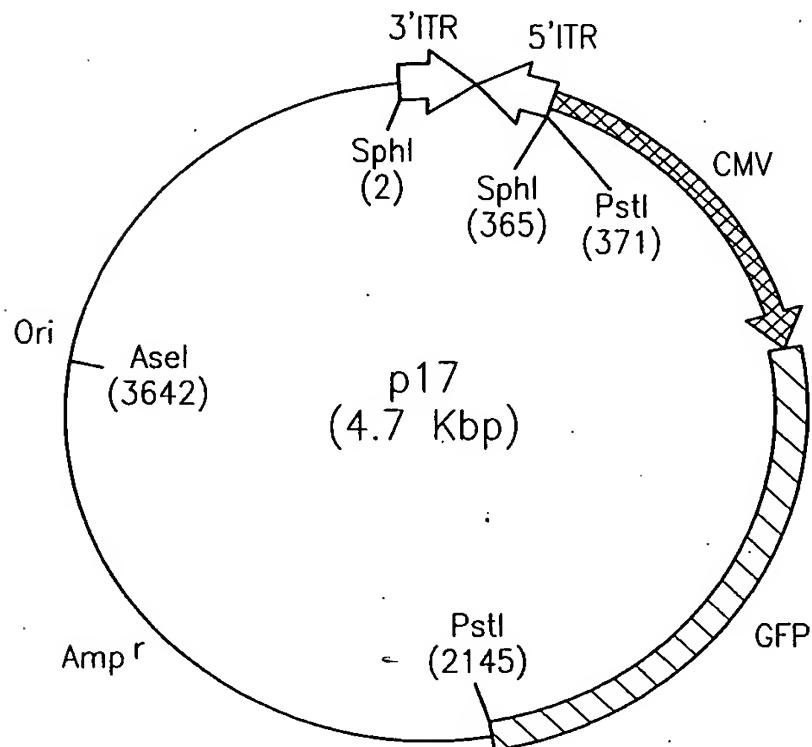


FIG. 4C

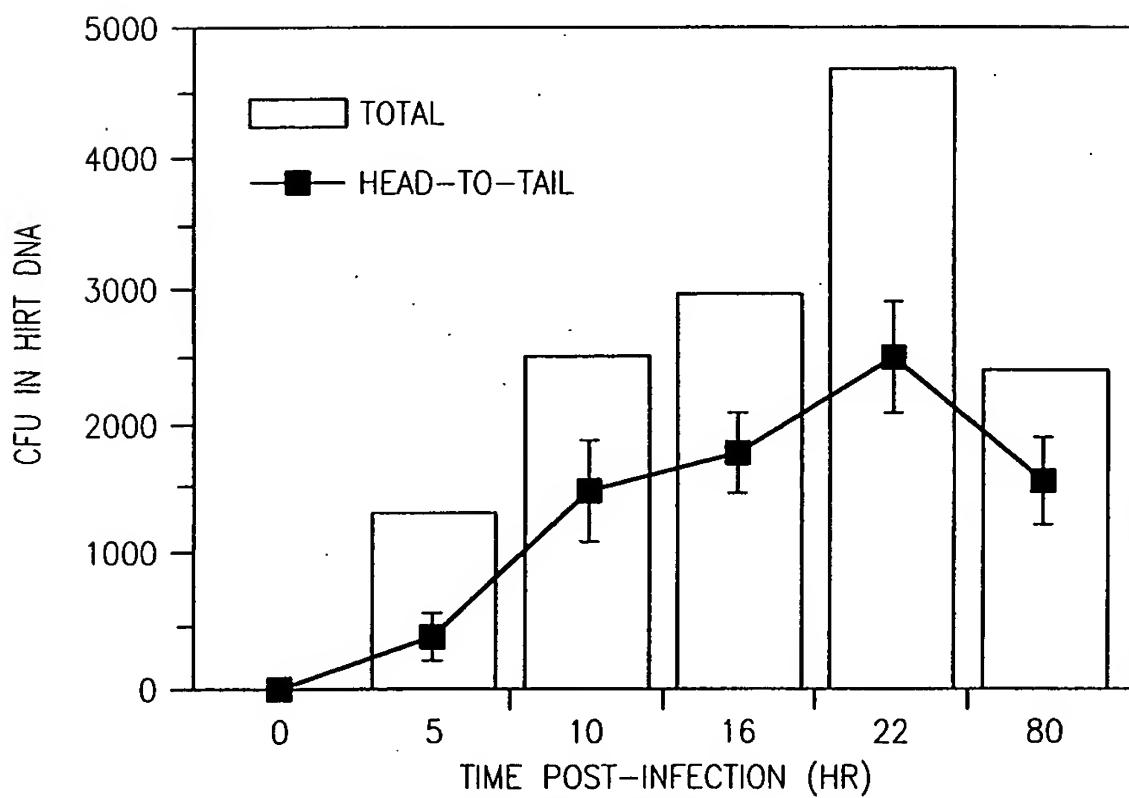


FIG. 5A

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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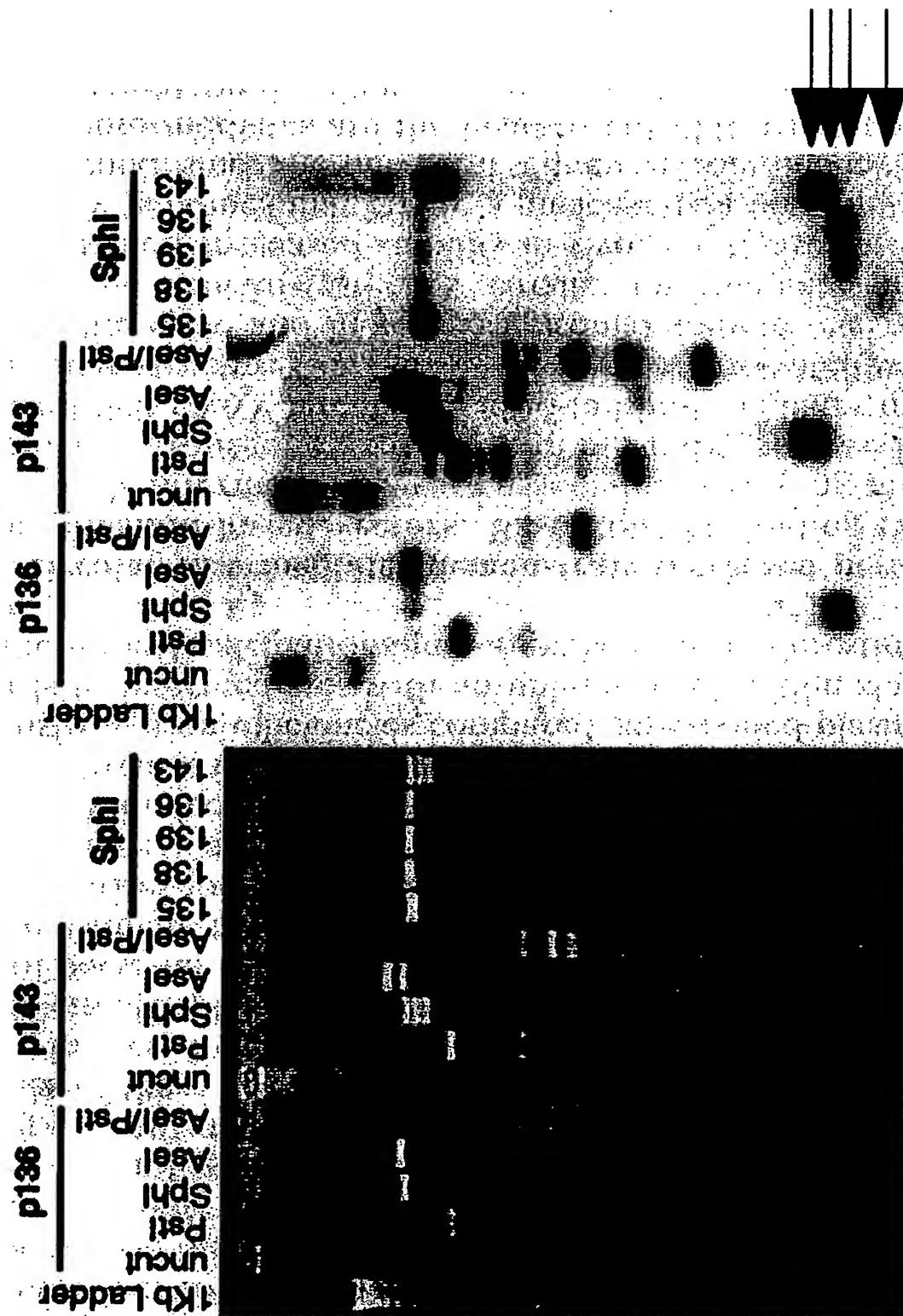


FIG. 5B

1. ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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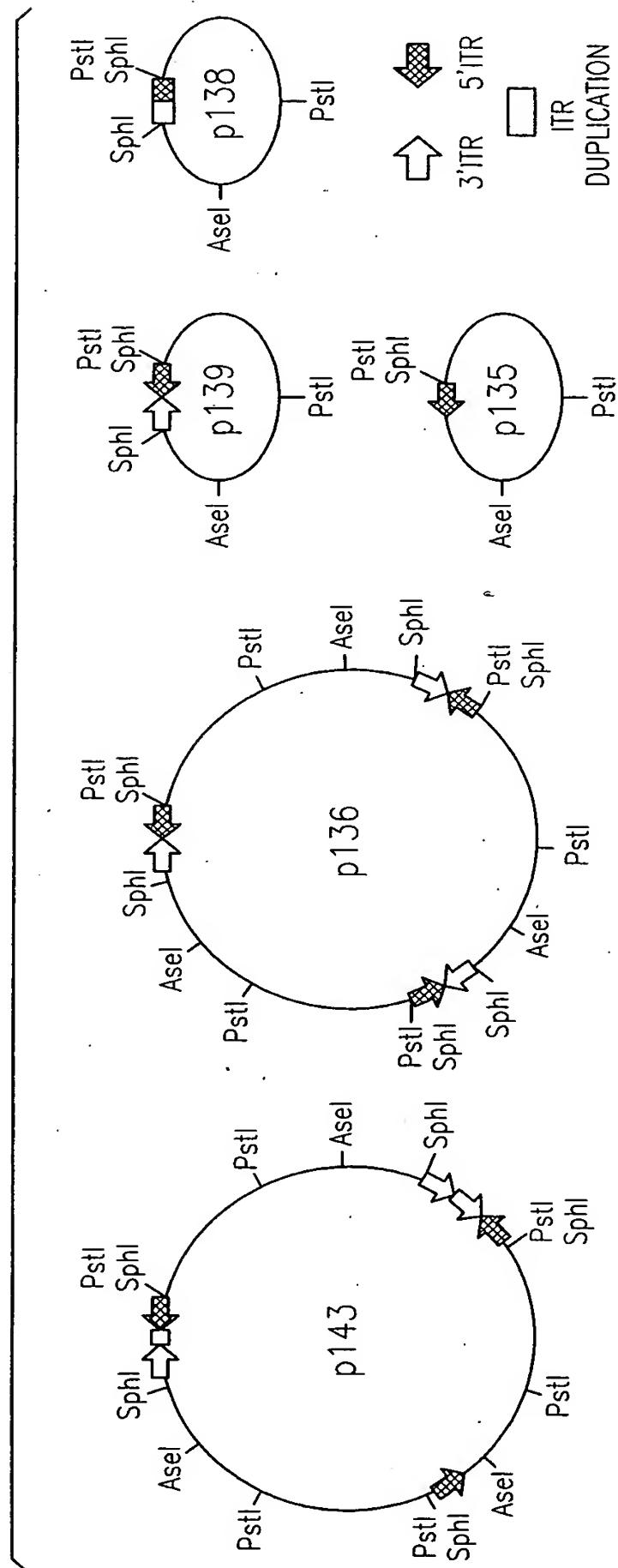


FIG. 5C

1. TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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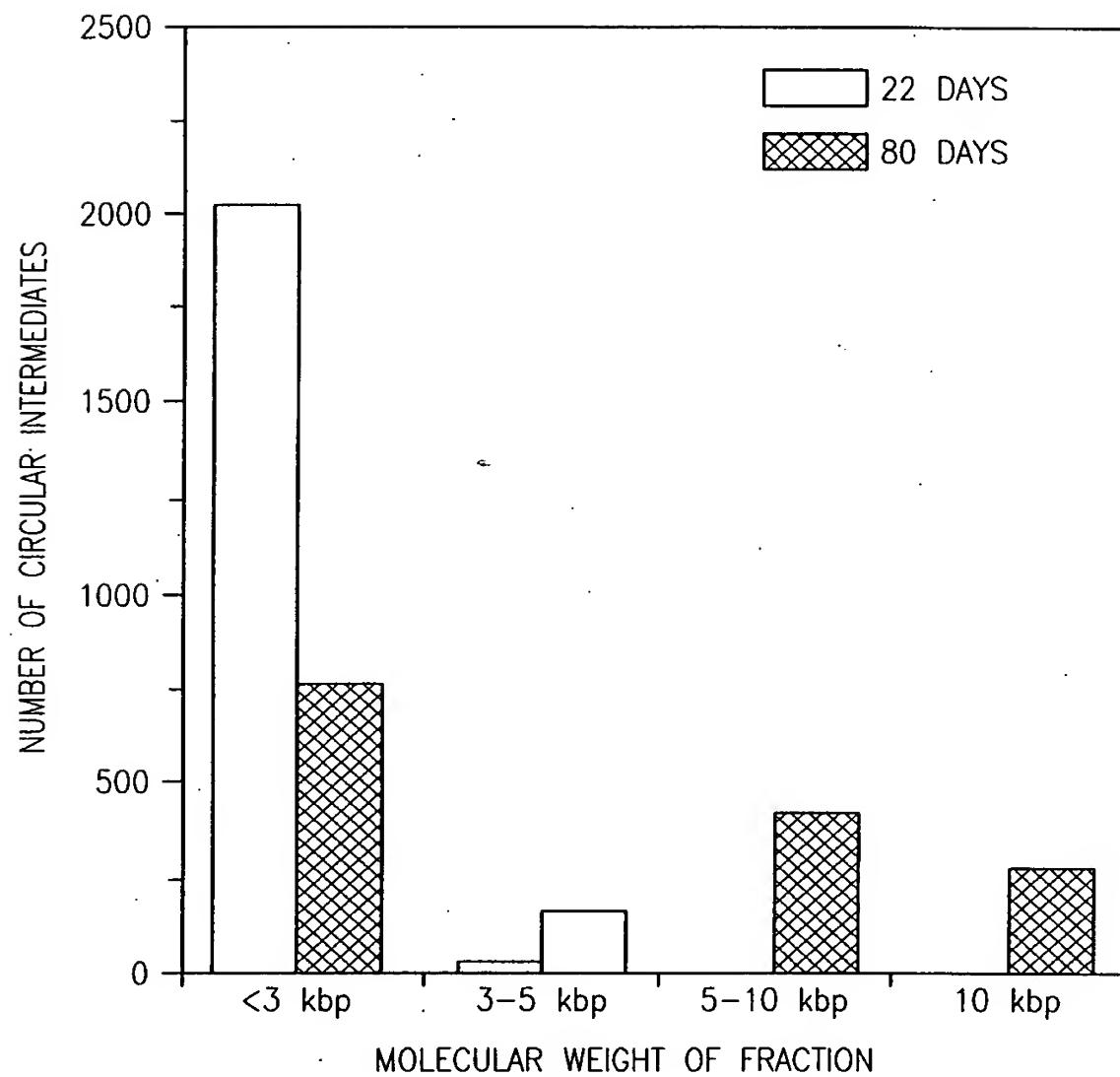
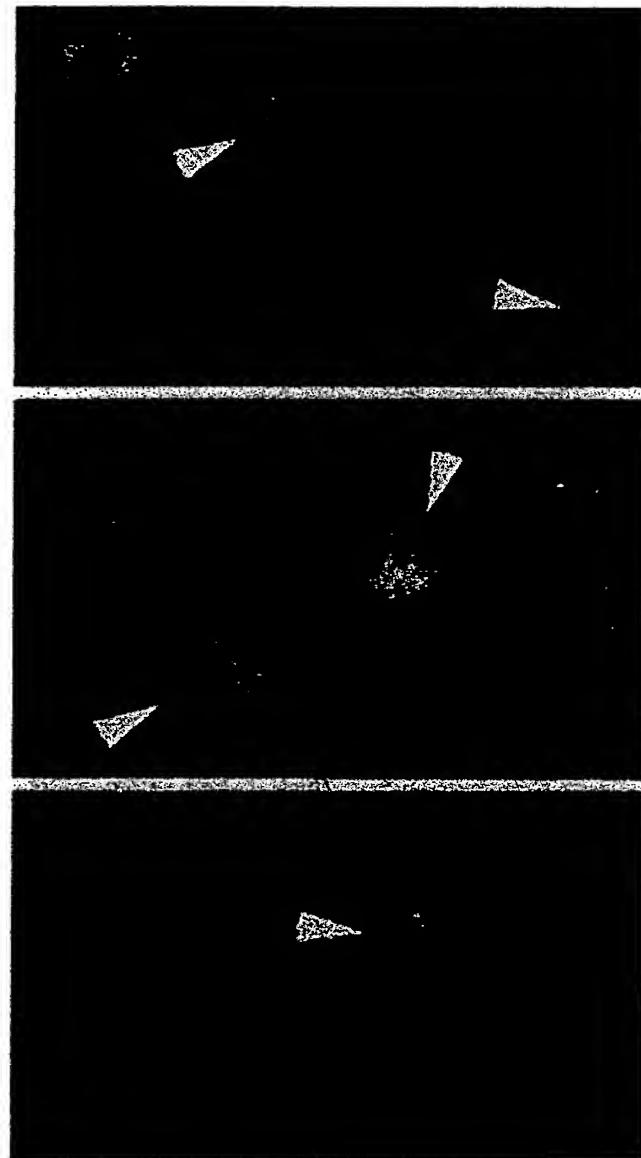


FIG. 6

THE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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p81



p87

pCMVGFP

FIG. 7A

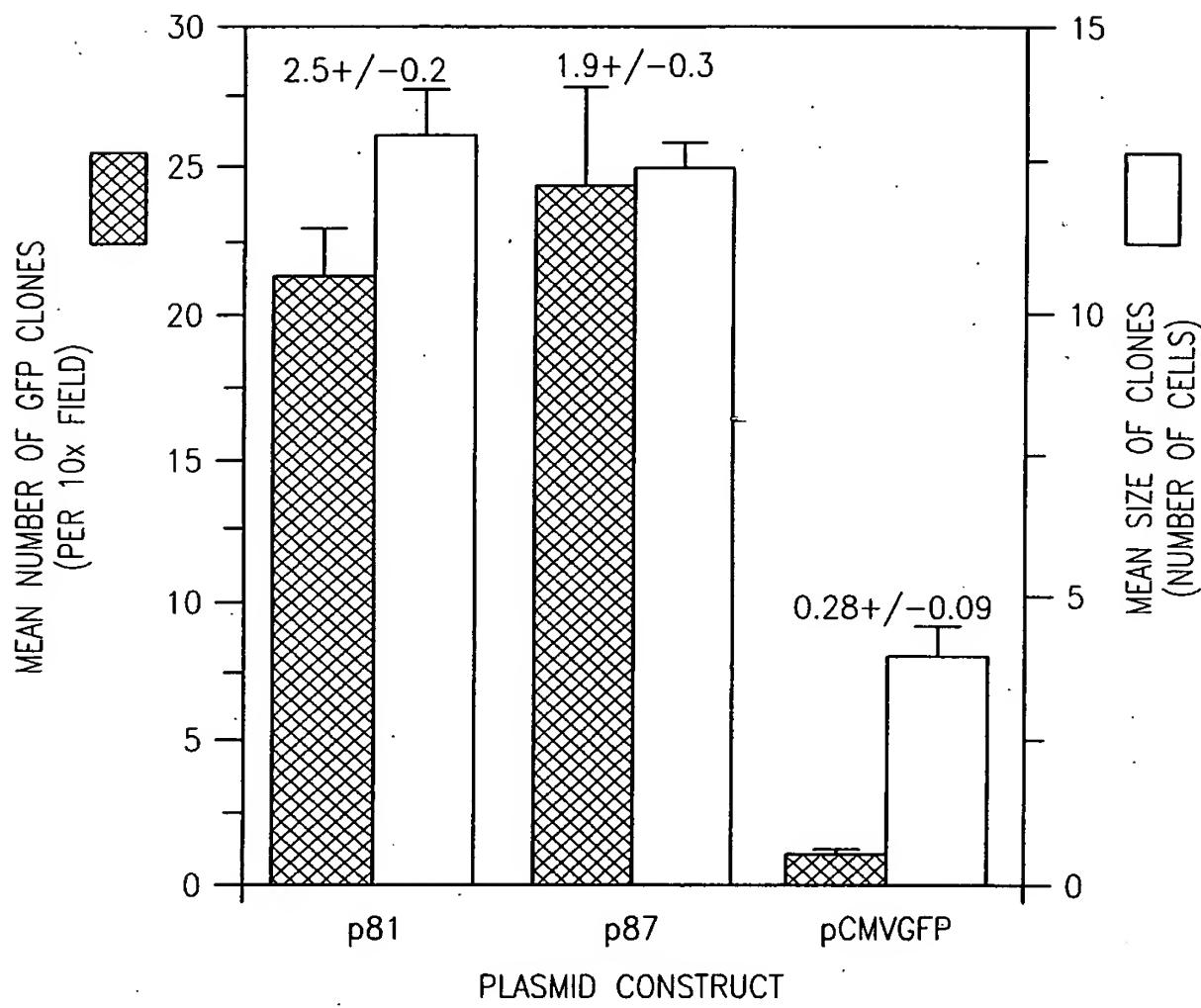


FIG. 7B

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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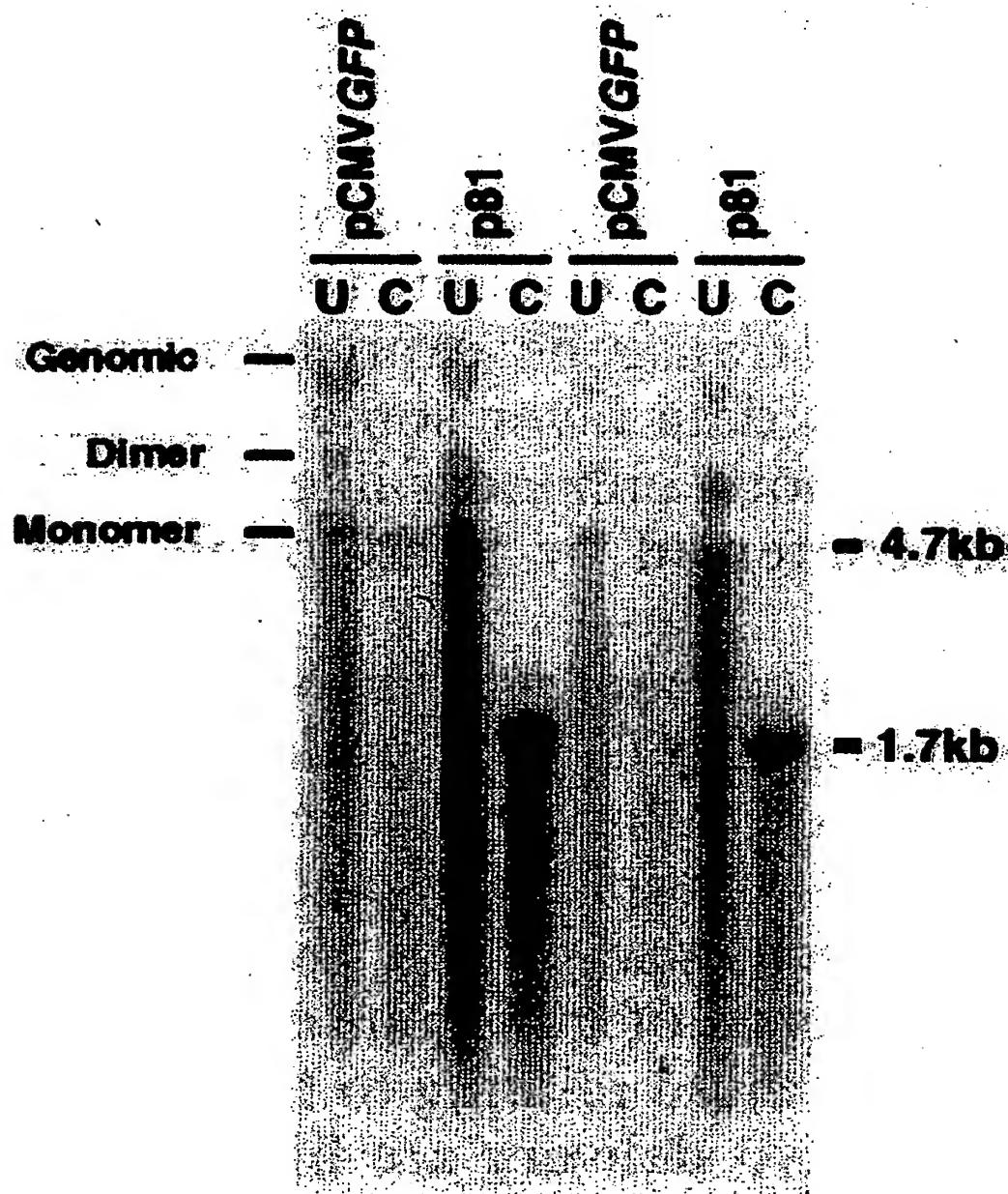


FIG. 7C

1. E: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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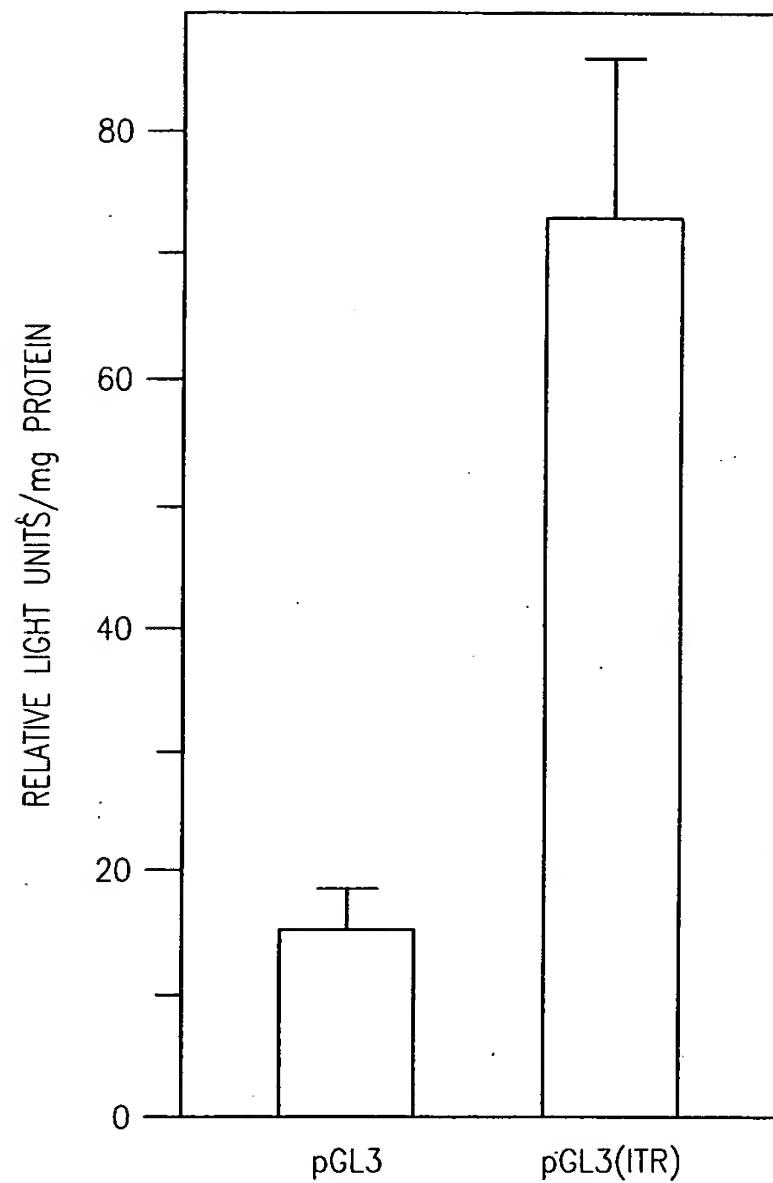


FIG. 7D

NAME: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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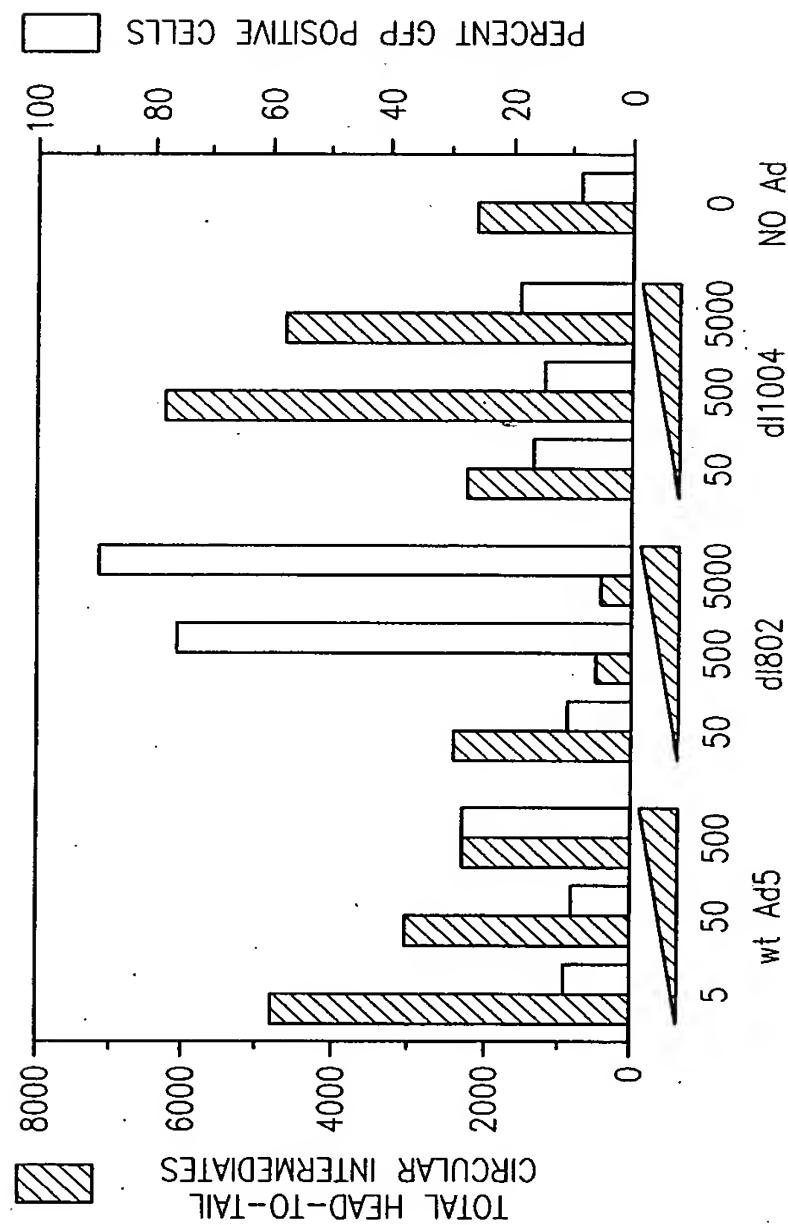


FIG. 8A

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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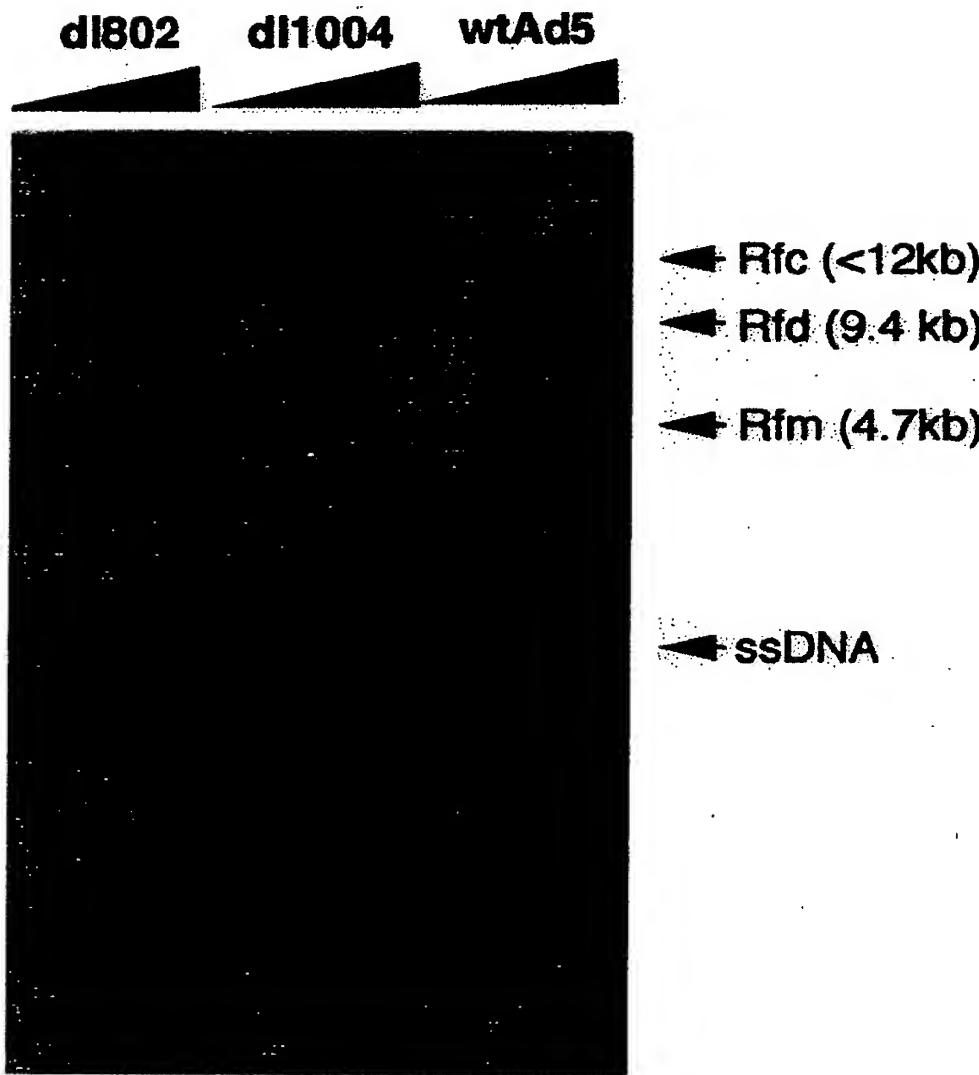


FIG. 8B

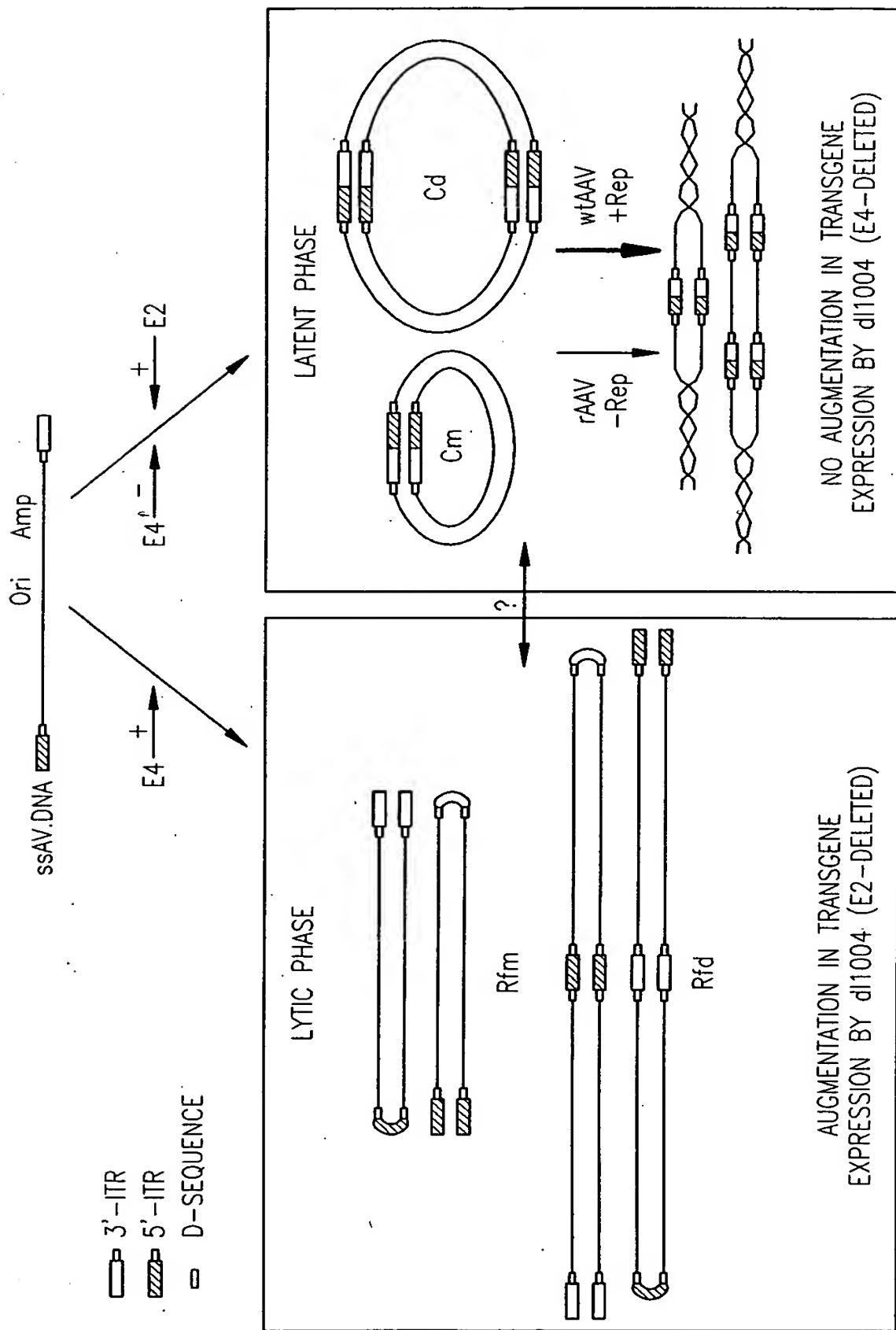


FIG. 9

ADENO-ASSOCIATED VIRUS VESICULAR SWINE FEVER VIRUS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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10 20 30 40 50 60
GCATGCAAGC TGTAGATAAG TAGCATGGCG GGTAAATCAT TAACTACAAG GAACCCCTAG
CGTACGTTGC ACATCTATTC ATCGTACCGC CCAATTAGTA ATTGATGTTTC CTTGGGGATC

70 80 90 100 110 120
TGATGGAGTT GGCCACTCCC TCTCTGCGCG CTCGCTCGCT CACTGAGGCC GGGCGGCCAA
ACTACCTCAA CCGGTGAGGG AGAGACGCCGC GAGCGAGCGA GTGACTCCGG CCCGCCGGTT

130 140 150 160 170 180
AGGTGCCCCG ACGCCCCGGC TTTGCCCCGG CGGCCTCAGT GAGCGAGCGA GCGCGCAGAG
TCCAGCGGGC TGCGGGCCCG AAACGGGCC CCGGGAGTCA CTCGCTCGCT CGCGCGTCTC

190 200 210 220 230 240
AGGGAGTGGC CAACTCCATC ACTAGGGGTT CCTTGTAGTT AATGATTAAC CCGCCATGCT
TCCCTCACCG GTTGAGGTAG TGATCCCCAA GGAAACATCAA TTACTAATTG GGCGGTACGA

250 260 270 280
ACTTATCTAC CGATGAATTG GAGCTTGATC GC.....
TGAATAGATG GCTACTTAAG CTCGAACGTA CG.....

FIG. 10A

10 20 30 40 50 60
GCATGCAAGC TGTAGATAAG TAGCATGGCG GGTAAATCAT TAACTACAAG GAACCCCTAG
CGTACGTTGC ACATCTATTC ATCGTACCGC CCAATTAGTA ATTGATGTTTC CTTGGGGATC

70 80 90 100 110 120
TGATGGAGTT GGCCACTCCC TCTCTGCGCG CTCGCTCGCT CACTGAGGCC GGGCGCGCGC
ACTACCTCAA CCGGTGAGGG AGAGACGCCGC GAGCGAGCGA GTGACTCCGG CCCGCCGGCG

130 140 150 160 170 180
TGGCTGGCTC ACTGAGGCCG GCGGACCAAA GGTGGCGGGAA GCGGGGGCTT TGCGGGGGCG
AGCGAGCGAG TGACTCCGGC CCGCTGGTTT CCAGCGGGCT CGGGCCCGAA ACGGGCCCGC

190 200 210 220 230 240
GCCTCAGTGA GCGAGCGCGC GCGCAGAGAG GGAGTGGCCA ACTCCATCAC TAGGGGTTCC
CGGAGTCACT CGCTCGCGCG CGCGTCTCTC CCTCACCGGT TGAGGTAGTG ATCCCCAAGG

250 260 270 280 290 300
TTGTAGTTAA TGATTAACCC GCCATGCTAC TTATCTACCG ATGAATTGCGA GCTTGCATGC
AACATCAATT ACTAATTGGG CGGTACGATG AATAGATGGC TACTTAAGCT CGAACGTTAGG

FIG. 10B

ADENO-ASSOCIATED VIRUS VERSUS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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10 20 30 40 50 60
GCATGCAAGC TGTAGATAAG TAGCATGGCG GGTTAATCAT TAAC TACAAG GAACCCCTAG
CGTACGTTCG ACATCTATTC ATCGTACCGC CCAATTAGTA ATTGATGTTG CTTGGGGATC

70 80 90 100 110 120
TGATGGAGTT GGCCACTCCC TCTCTGCGCG CTCGCTCGCT CACTGAGGCC GGGCGACCAA
ACTACCTCAA CCGGTGAGGG AGAGACGCGC GAGCGAGCGA GTGACTCCGG CCCGCTGGTT

130 140 150 160 170 180
AGGTGCGCCCG ACGCCCGGGC TTTGGTCGCC CGGCCTCAGT GAGCGAGCGA GCGCGCAGAG
TCCAGCGGGC TGCGGGCCCG AAACCAGCGG GCCGGAGTCA CTCGCTCGCT CGCGCGTC

190 200 210 220 230 240
AGGGAGTGGC CAACTCCATC ACTAGGGGTT CCTTGTAGTT AATGATTAAC CCGCCATGCT
TCCCTCACCG GTTGAGGTAG TGATCCCCAA GGAACATCAA TTACTAATTG GGCGGTACGA

250 260 270 280
ACTTATCTAC CGATGAATTC GAGCTTGCAT GC.....
TGAATAGATG GCTACTTAAG CTCGAACGTA CG.....

FIG. 10C

ADENO-ASSOCIATED VIRUS VERSUS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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	10	20	30	40	50
P81	1 GCATGCAAGC	TGTAGATAAG	TAGCATGGCG	GGTTAACATCAT	TAAC TACAAG 50
p79	1 GCATGCAAGC	TGTAGATAAG	TAGCATGGCG	GGTTAACATCAT	TAAC TACAAG 50
p1202	1 GCATGCAAGC	TGTAGATAAG	TAGCATGGCG	GGTTAACATCAT	TAAC TACAAG 50
	60	70	80	90	100
P81	51 GAACCCCTAG	TGATGGAGTT	GGCCACTCCCC	TCTCTGCGCG	CTCGCTCGCT 100
p79	51 GAACCCCTAG	TGATGGAGTT	GGCCACTCCCC	TCTCTGCGCG	CTCGCTCGCT 100
p1202	51 GAACCCCTAG	TGATGGAGTT	GGCCACTCCCC	TCTCTGCGCG	CTCGCTCGCT 100
	110	120	130	140	150
P81	101 CACTGAGGCC	GGGCG-----	-----	-----	GCCAAAG 150
p79	101 CACTGAGGCC	GGGCGCGCGC	TCGCTCGCTC	ACTGAGGCCG	GGCGaCcAAA 150
p1202	101 CACTGAGGCC	GGGCG-----	-----	-----	ACCAAAG 150
	160	170	180	190	200
P81	151 GTCGCCCCGAC	GCCCCGGGCTT	TGCCCCGGGCG	GCCTCAGTGA	GCGAGCGAGC 200
p79	151 GgtcgCCcga	GCCCCGGGCTT	TGCCCCGGGCG	GCCTCAGTGA	GCGAGCGCGC 200
p1202	151 GTCGCCCCGAC	GCCCCGGGCTT	TGgtCGccCG	GCCTCAGTGA	GCGAGCGAGC 200
	210	220	230	240	250
P81	201 GCGCAGAGAG	GGAGTGGCCA	ACTCCATCAC	TAGGGGTTCC	TTGTAGTTAA 250
p79	201 GCGCAGAGAG	GGAGTGGCCA	ACTCCATCAC	TAGGGGTTCC	TTGTAGTTAA 250
p1202	201 GCGCAGAGAG	GGAGTGGCCA	ACTCCATCAC	TAGGGGTTCC	TTGTAGTTAA 250
	260	270	280	290	300
P81	251 TGATTAACCC	GCCATGCTAC	TTATCTACCG	ATGAATTGCA	GCTTGCATGC 300
p79	251 TGATTAACCC	GCCATGCTAC	TTATCTACCG	ATGAATTGCA	GCTTGCATGC 300
p1202	251 TGATTAACCC	GCCATGCTAC	TTATCTACCG	ATGAATTGCA	GCTTGCATGC 300

FIG. 11

ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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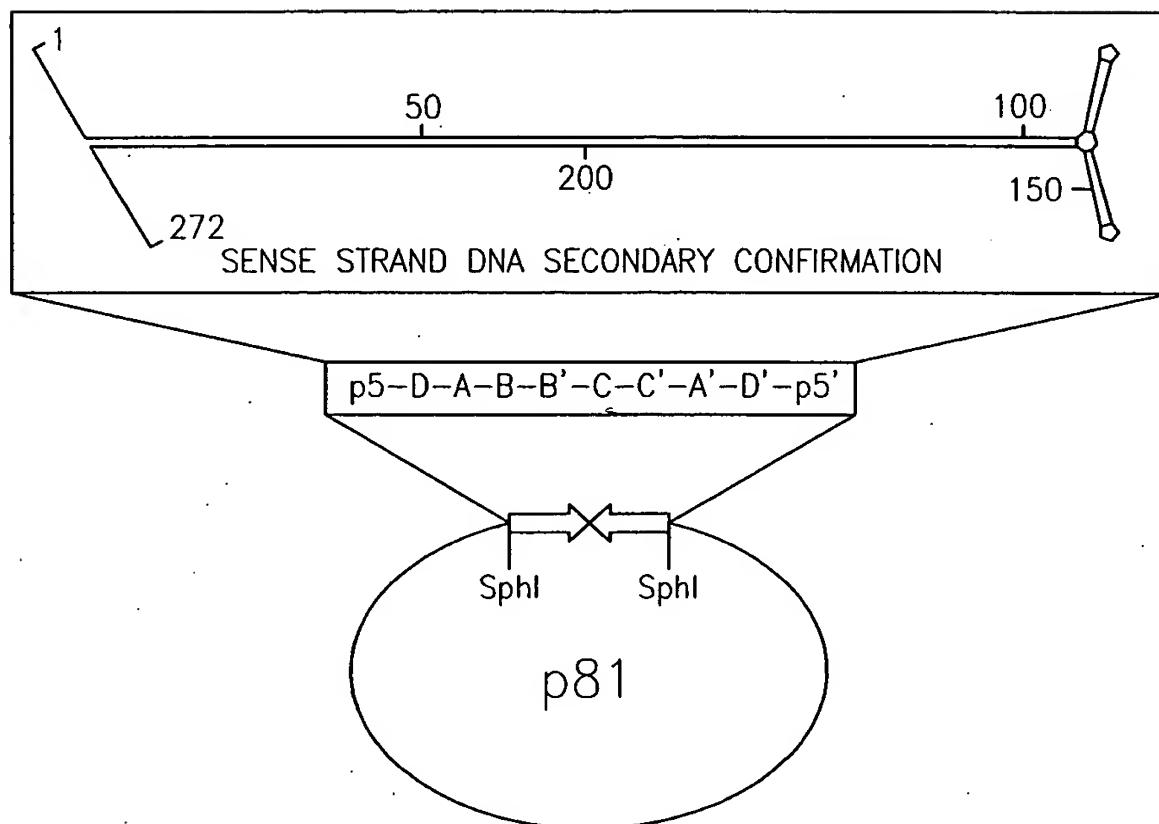


FIG. 12A

1. ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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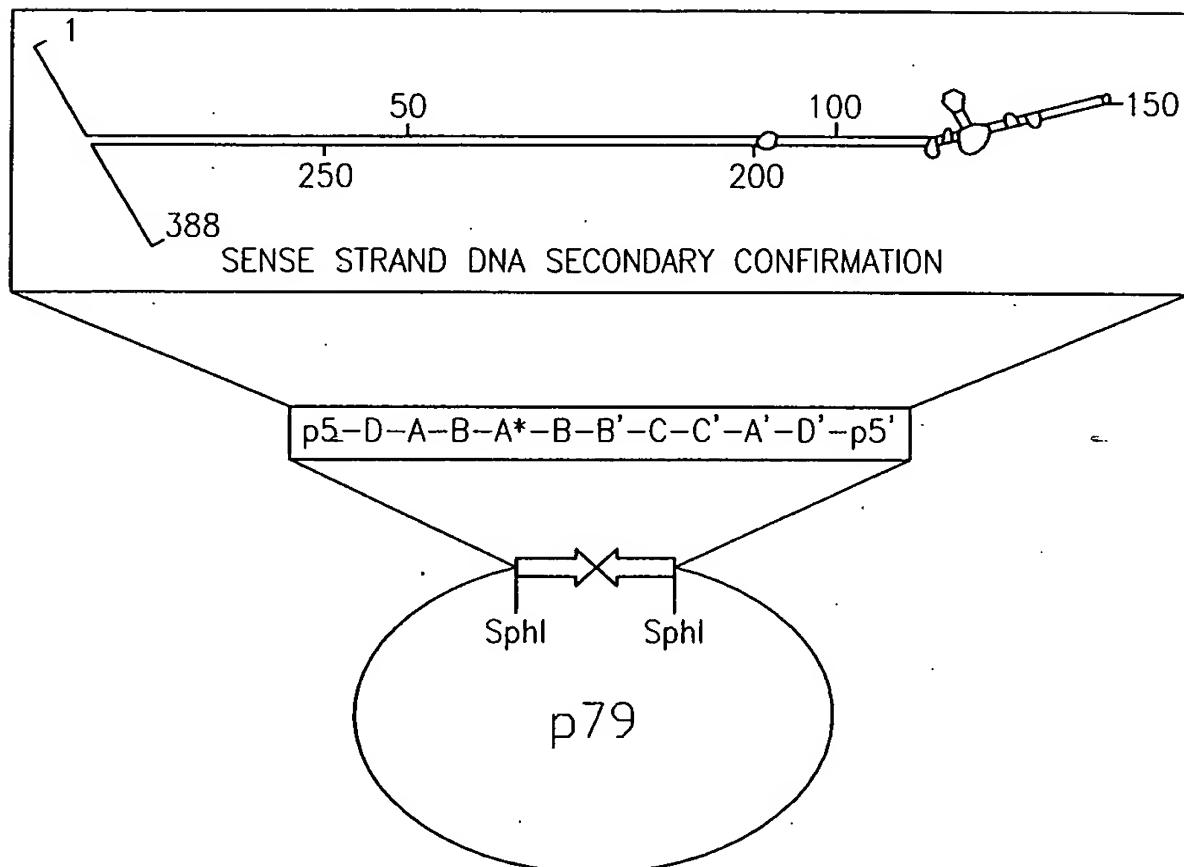


FIG. 12B

THE ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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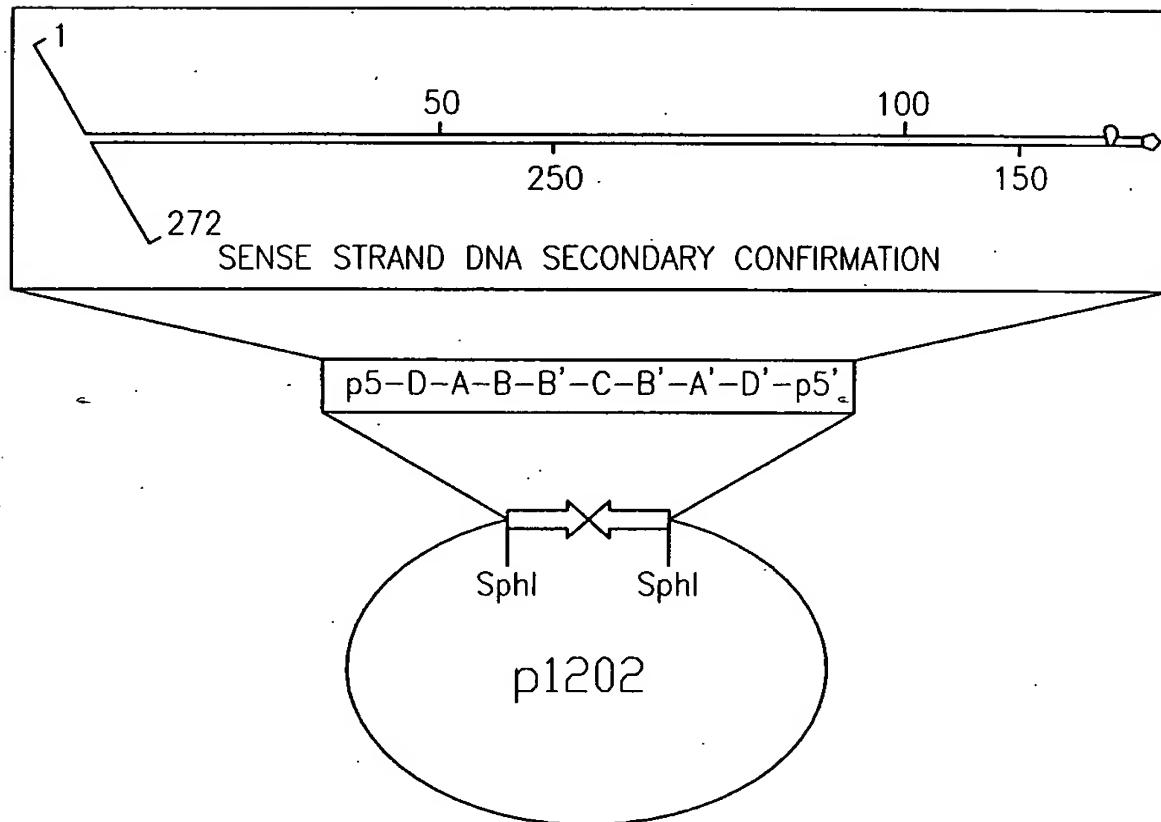


FIG. 12C

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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FIG. 13

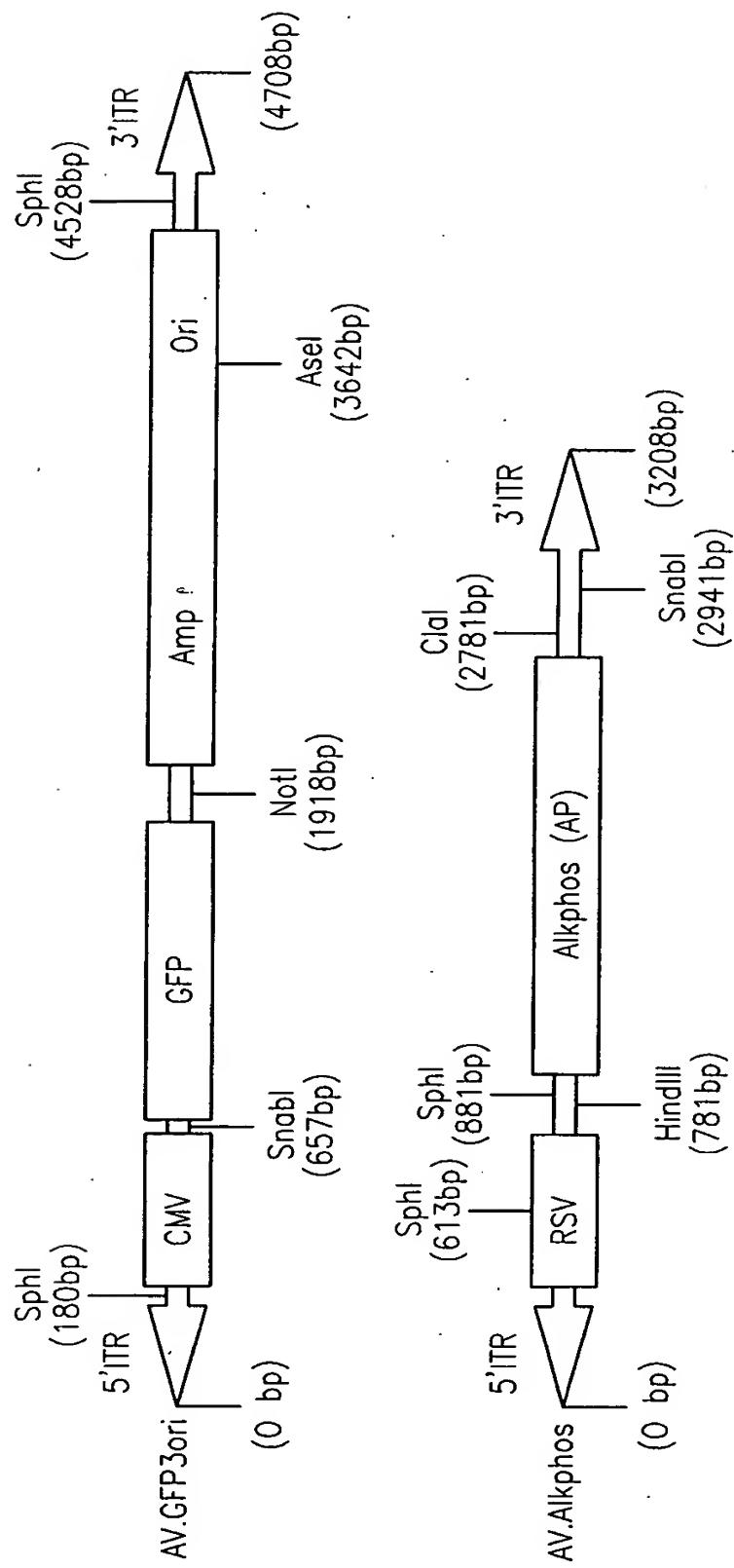
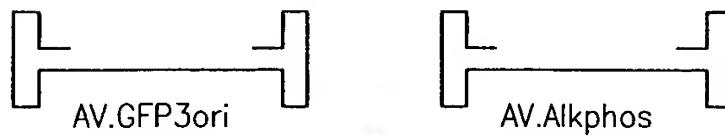


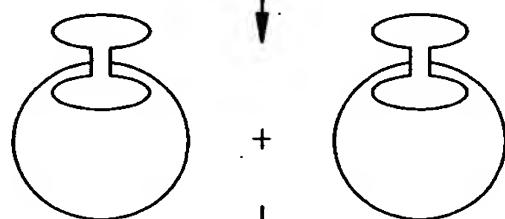
FIG. 14A

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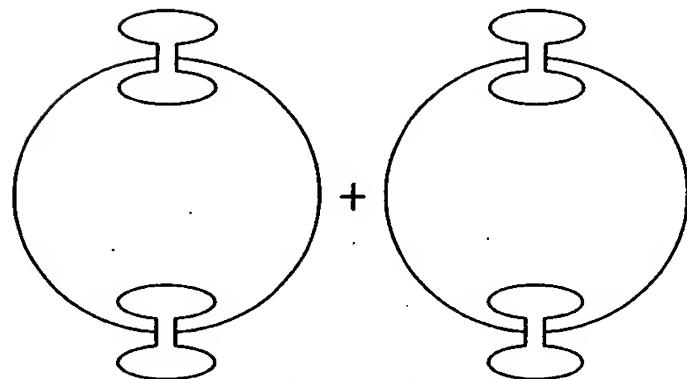
MODEL 1
ROLLING CIRCULAR REPPLICATION



CO-INFECTON
CIRCULARIZATION



CONCATAMERIZATION



DIMERS AND
MULTIMERS

RESCUE

PLASMIDS EXPRESS
GFP ONLY

FIG. 14B

MODEL 2
INTERMOLECULAR RECOMBINATION

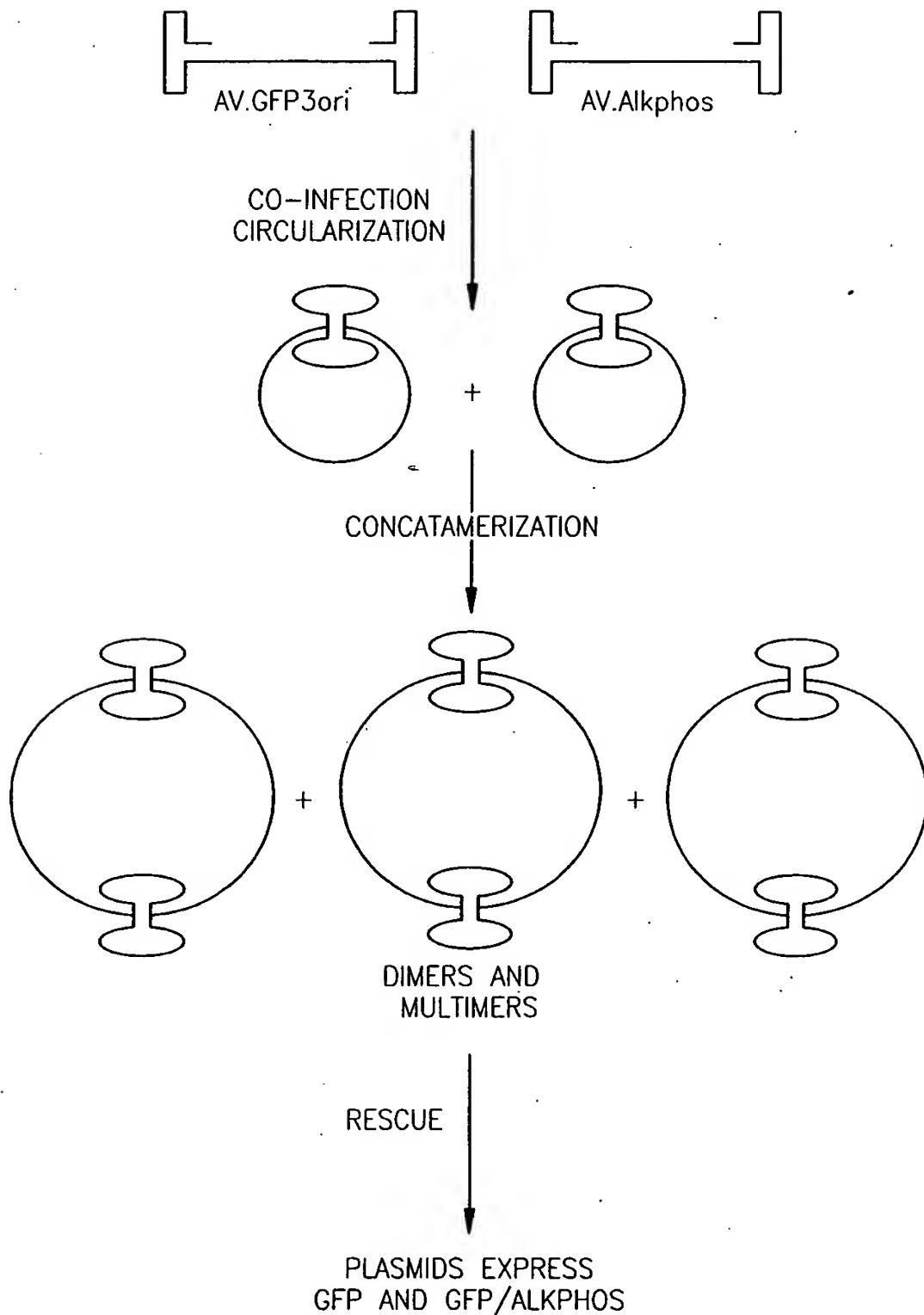


FIG. 14C

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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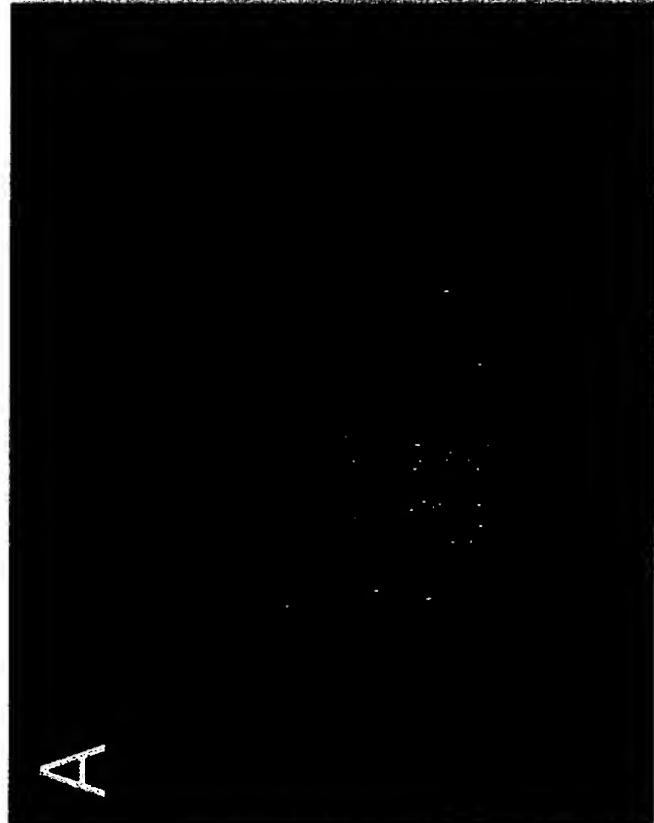


FIG. 15A

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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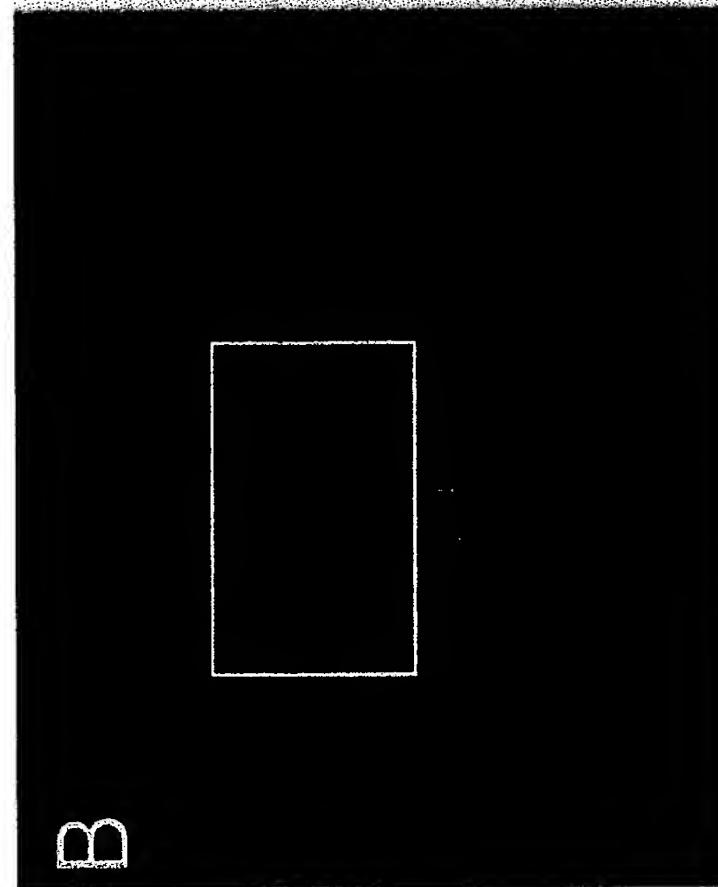
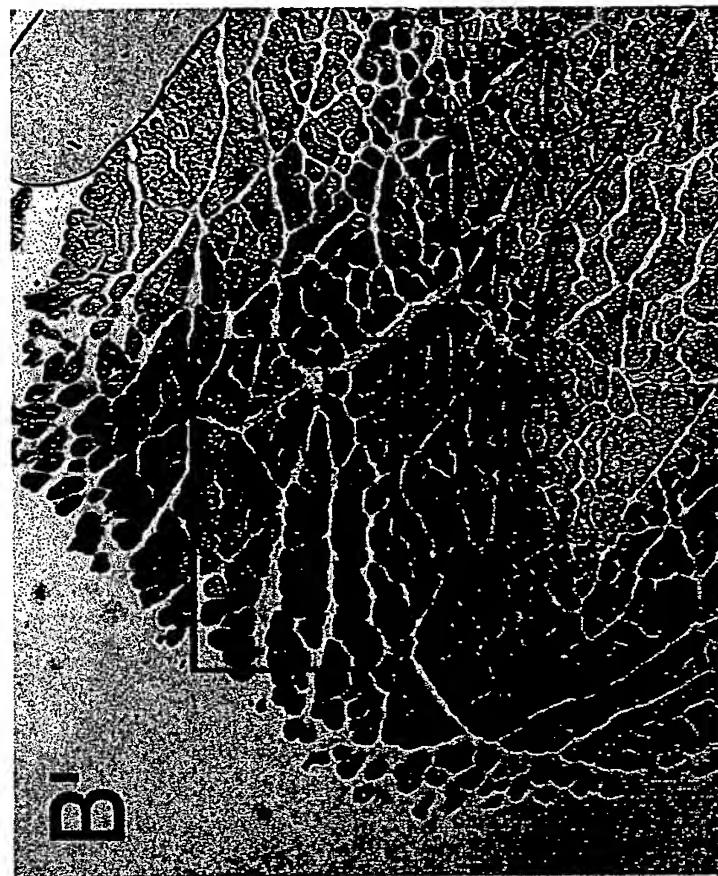


FIG. 15B

FIG. 2: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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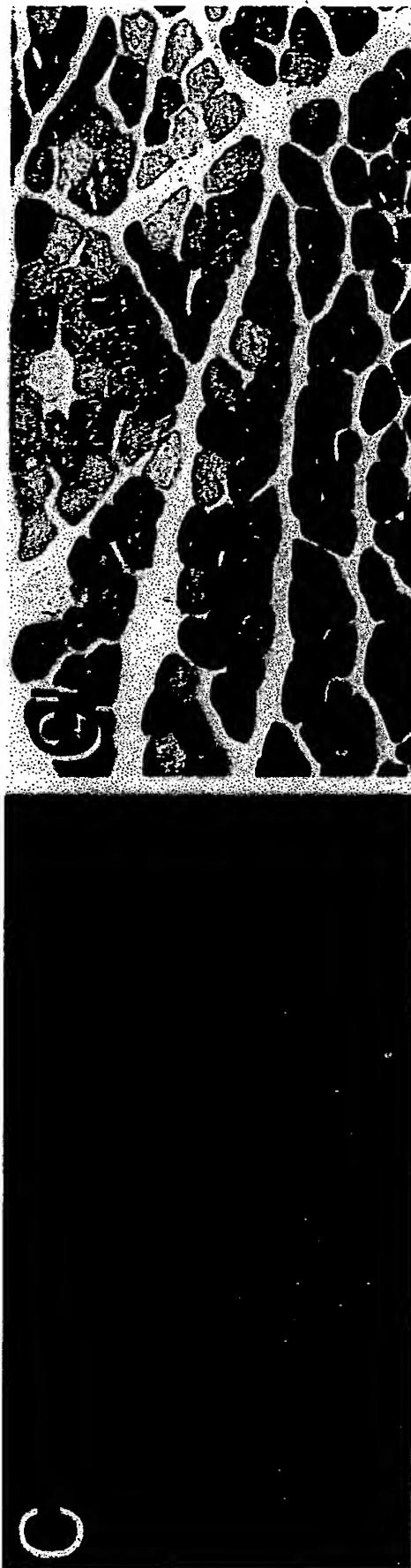


FIG. 15C

TITLE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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FIG. 15D

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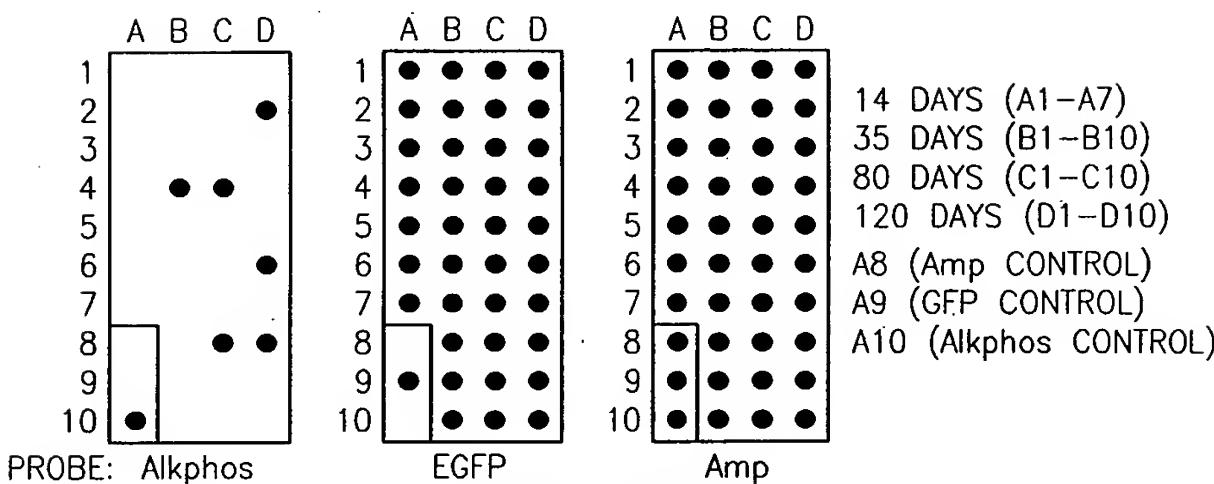


FIG. 16A

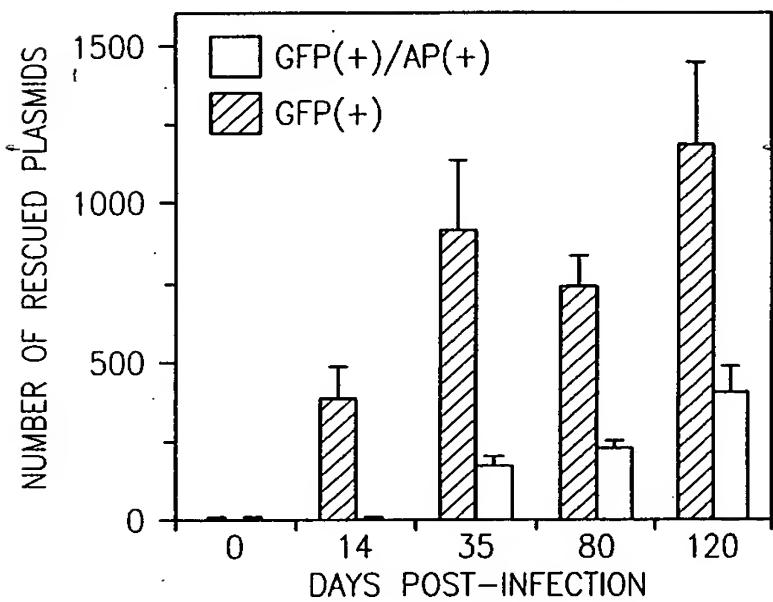


FIG. 16B

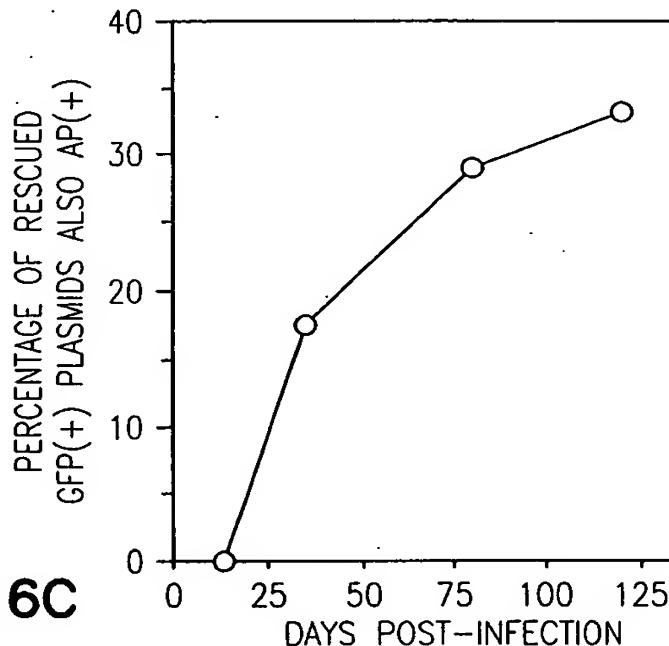


FIG. 16C

NAME: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
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Nomarski GFP Allphos

FIG. 17A

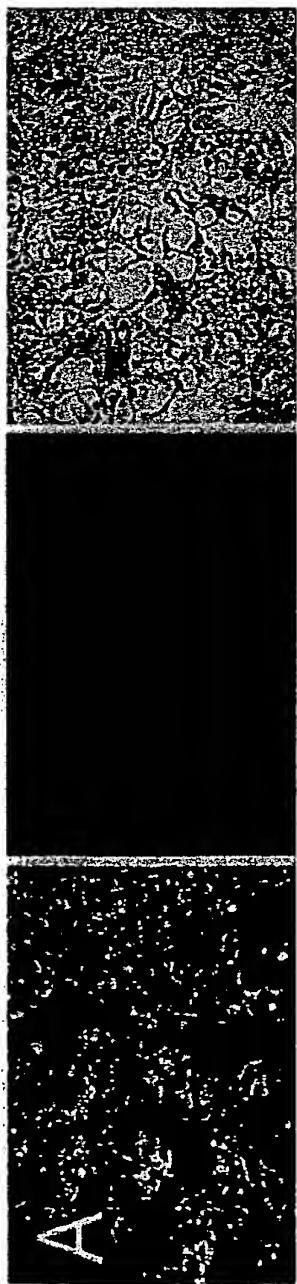


FIG. 17B



FIG. 17C



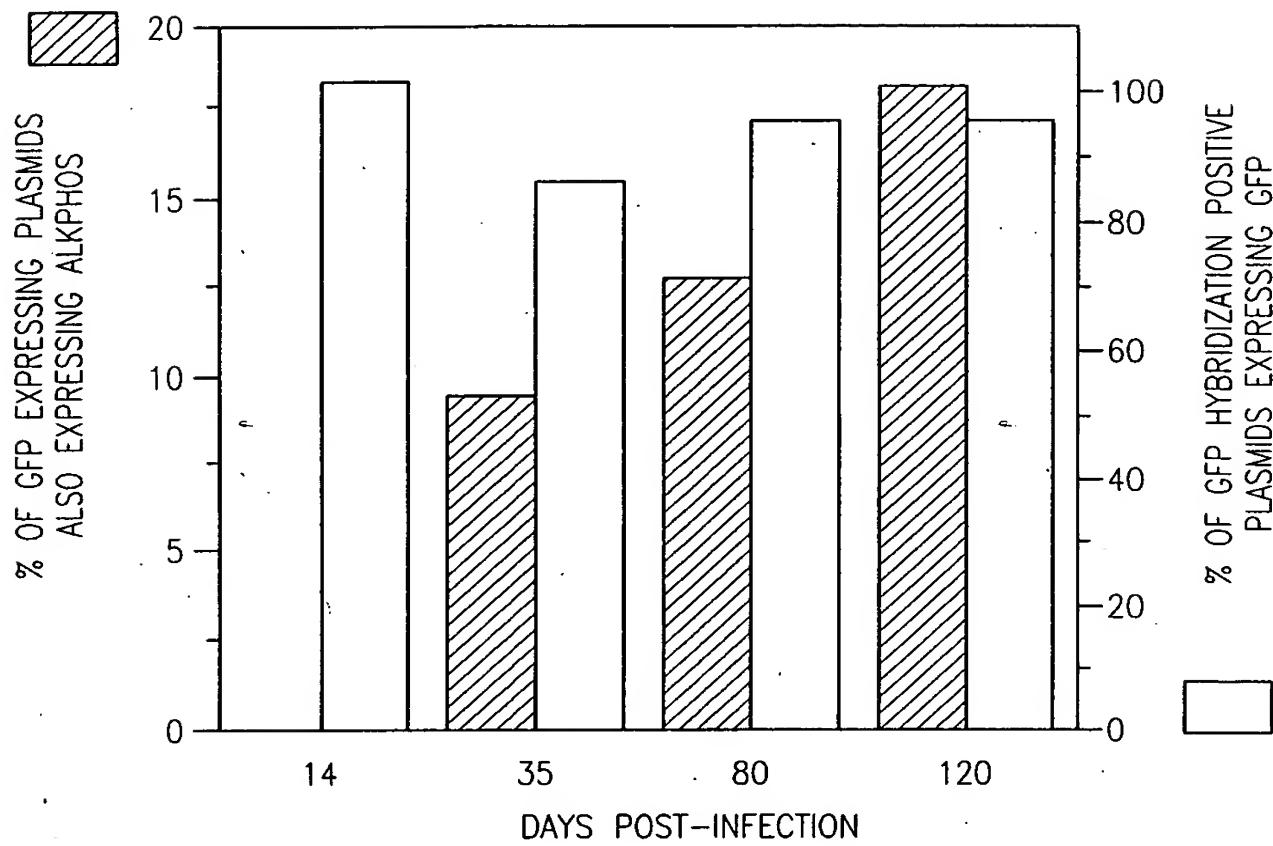


FIG. 17D

THE: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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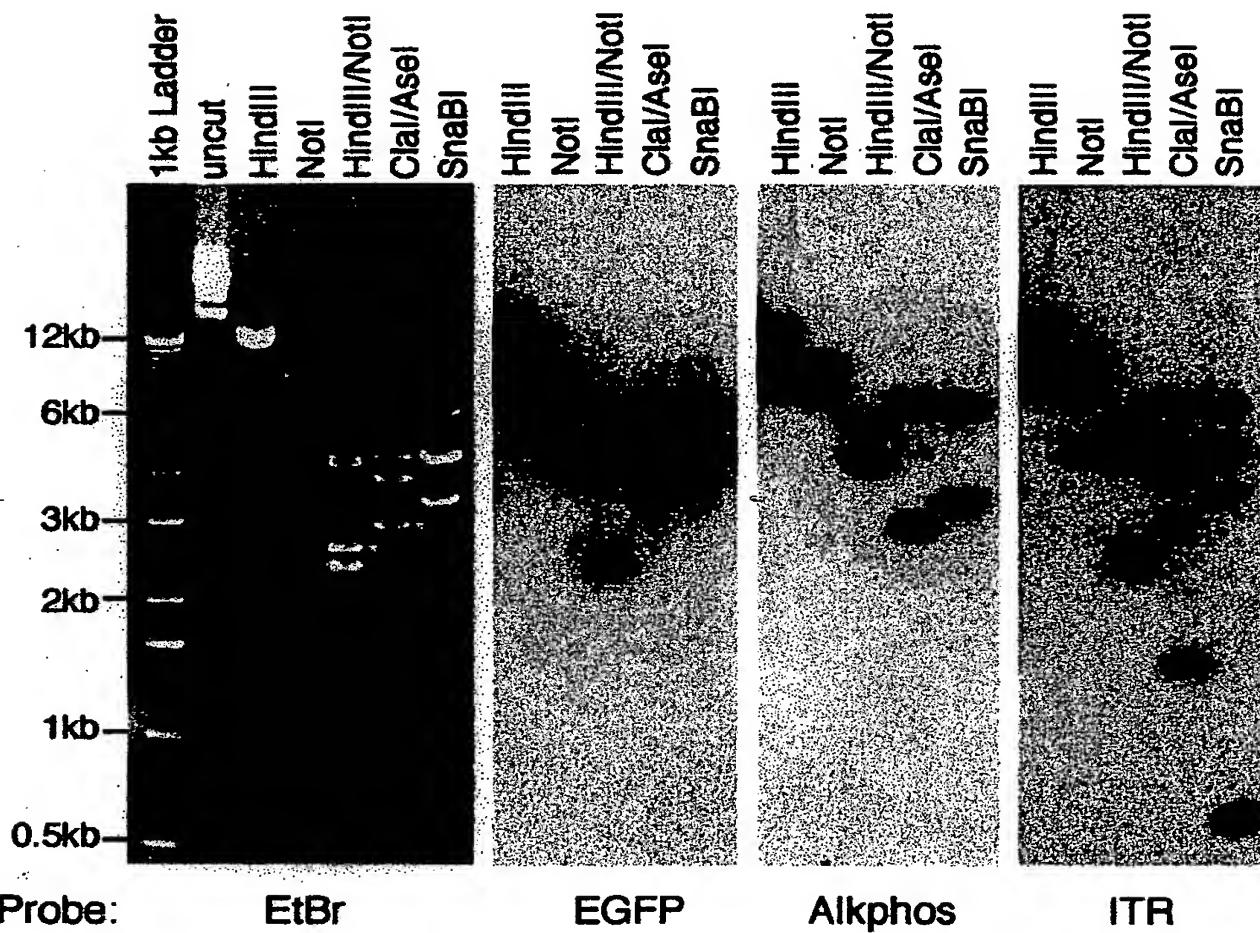


FIG. 18A

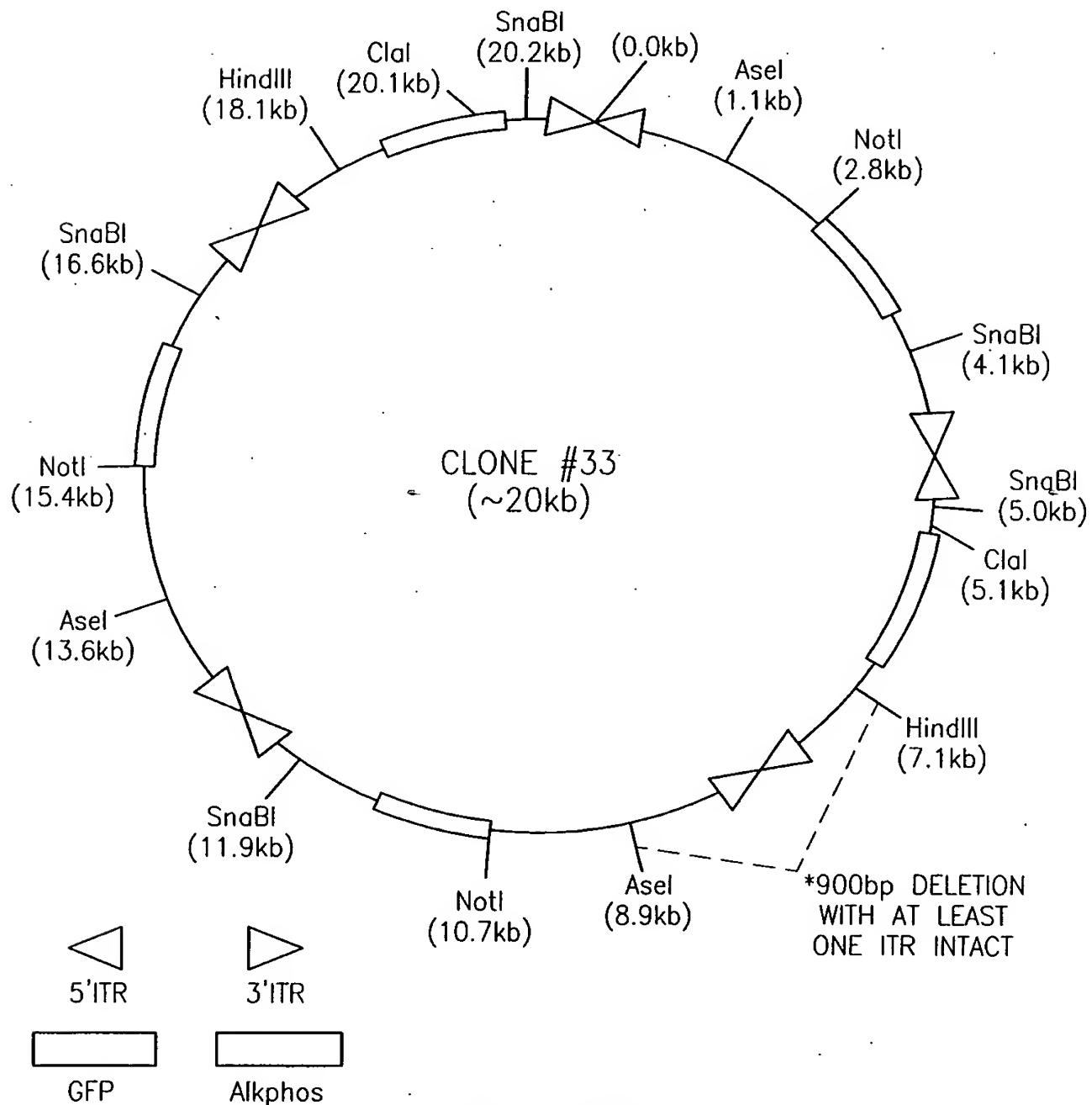


FIG. 18B

THE ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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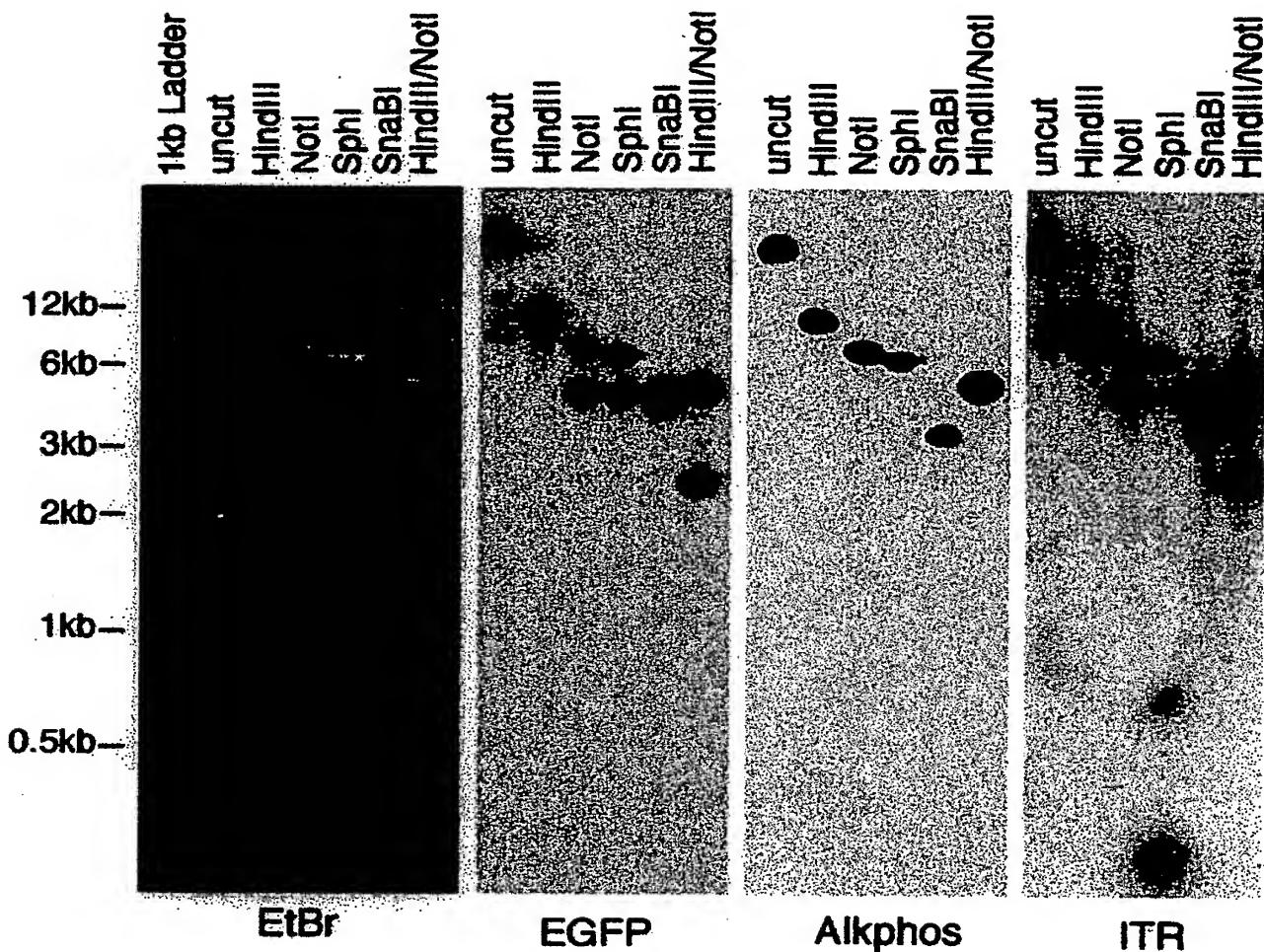


FIG. 18C

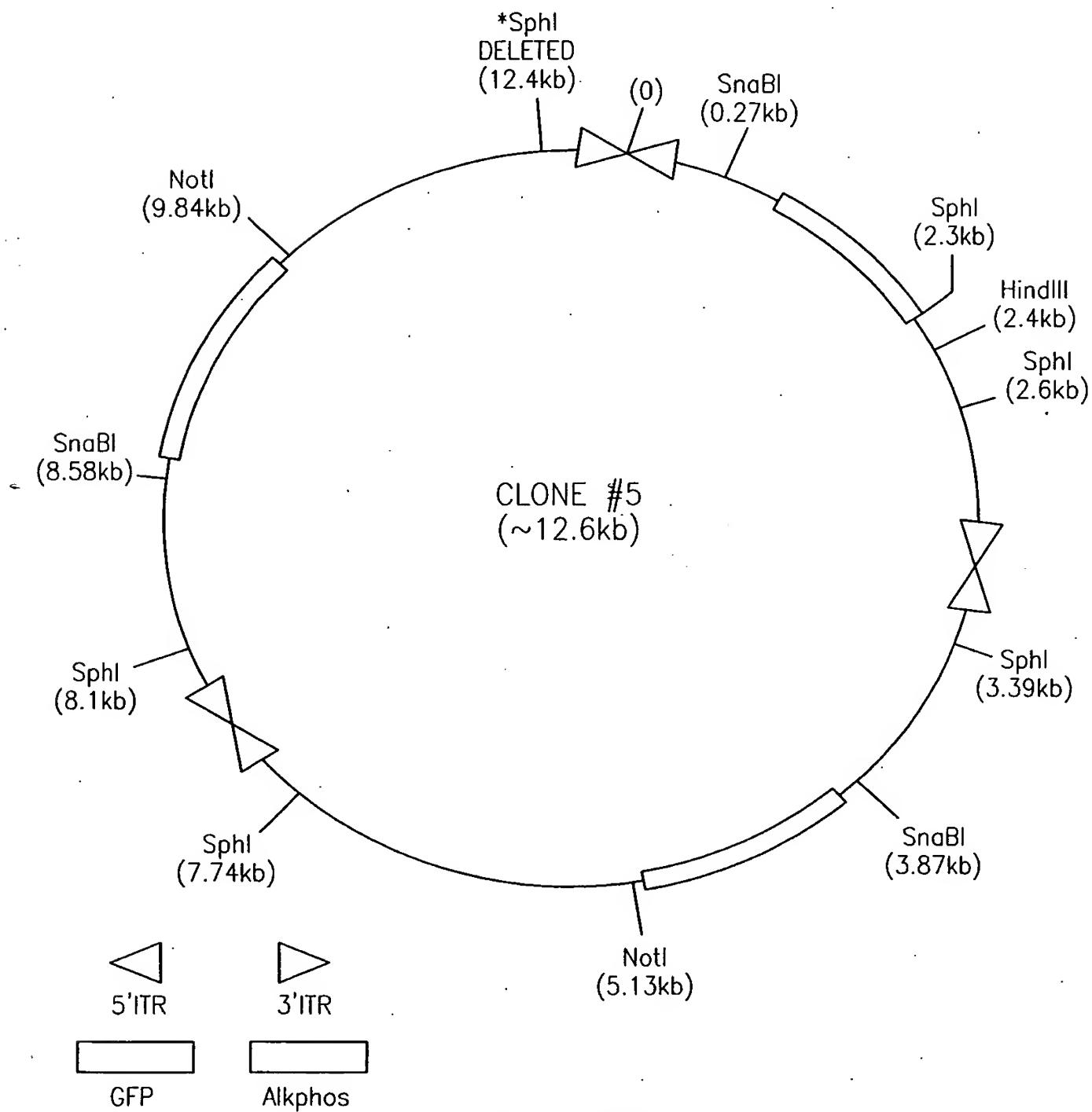


FIG. 18D

1: ADENO-ASSOCIATED VIRUS VECTORS
INVENTORS NAME: John F. Engelhardt et al.
SERIAL NO.: 09/276,625

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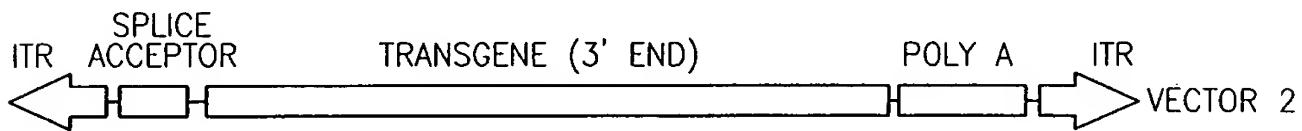
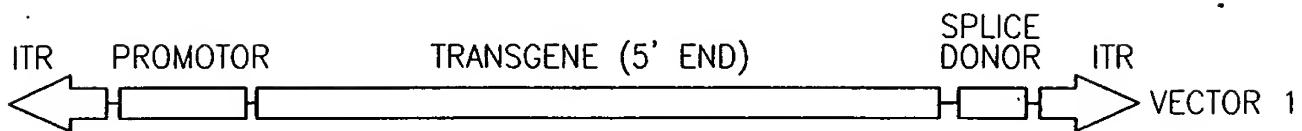


FIG. 19A

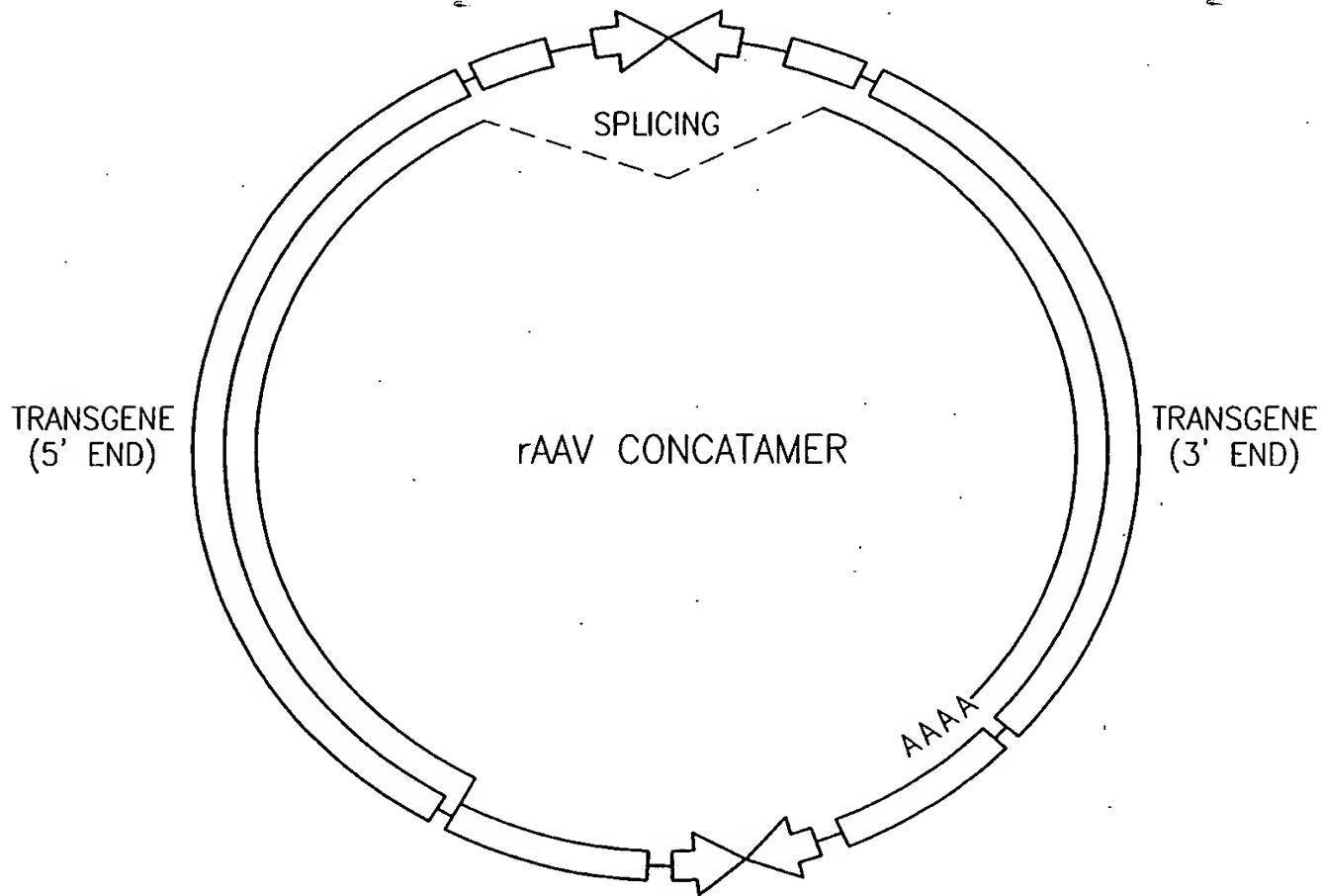


FIG. 19B